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WORLD MARITIME UNIVERSITY.

TITLE : A MACRO ECONOMIC EVALUATION FOR COST-EFFECTIVE
LAKE TRANSPORTATION IN MALAWI.

BY

CHISALE, SUSE KEDRON

FROM

REPUBLIC OF MALAWI

A dissertation submitted to the World Maritime University in
partial fulfilment of the requirements for the degree of Science in
General Maritime Administration.

YEAR OF GRADUATION

1993.

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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100 tambala = 1 Malawi Kwacha (MK)

1 US Dollar is Equivalent to Approximately 4 Kwacha.

AN ABSTRACT.

This paper reviews the lake transportation system in Malawi. It gives a picture of the economic framework of Malawi, its overall transport structure, the lake transport system and it illustrates the problems which are encountered in the system. The performance of the operation of this transport service has not been satisfactory for over the past decade. This is because the company has been operating at a loss during this period. However, it is the wish of the government to improve the utilisation of the lake and thereby minimise domestic and foreign transportation costs.

The main purpose of this paper is to critically evaluate the entire lake transportation system, and come up with economic policy measures which could facilitate cost-effective movement of cargo and passengers on the lake.

SCOPE and METHODOLOGY

The paper covers different areas in the lake transport system. These includes operations, marketing, management of the vessels and the role of the government in creating a suitable and conducive environment for the development of lake transportation. The period examined is mainly the past decade, from 1980 to the present time.

In order to give appropriate recommendations, a macroeconomic analysis and evaluation of the financial status has been done on costs and revenue, cargo and passenger volumes, freight rates and fares evaluation. In this analysis, the use of econometrics theories such as Linear Regression Analysis is also applied apart from a descriptive analysis. The paper also deals with ton-kilometers and passenger - kilometers performed during the past decade.

The analysis has been done at a macro level because the writer looks at the Lake Service Division from the Government point of view. An evaluation of the weaknesses and problems encountered in promotion and development of the lake transport system has also been tackled.

The sources of information used in compiling this document include the interviews with Malawi Railways and Lake Service officials, materials collected from Department of Economic Planning & Development during a period of field research at home, in Malawi, materials from research at the World Maritime University Library, information from lectures both in class and on field trips, including lectures given by experts and visiting professors from different maritime institutions all over the world. Some concepts and materials are based on the collection from a Directed Field Research Programme at lake Vanern in Northern Sweden where the writer was attached to two companies (Erik Thun and Alhmark Shipping Lines) that operate cargo vessels on the lake.

The area of the dissertation has also widely been discussed with colleagues some of whom are officers from Maritime Education Centres, Shipping Companies and Maritime Administrations in various countries. Therefore, some ideas in the dissertation reflect their influence.

LIMITATIONS:-

The main limitation of the paper is the inadequacy of books, articles and relevant materials which are specifically written on costs of lake transportation in our Library at World Maritime University. Perhaps it is because lakes are not widely used for transport at an international level. It is also felt that the timing of the home research in Malawi was not done at a convenient time (Dec-Jan) because at that time some of the employees were away on Christmas and New Year's holidays. Therefore, in some cases it was almost impossible to obtain reliable data. There was also a financial constraint which made it difficult to carry out the research more effectively.

CHAPTER 1.

1.0 INTRODUCTION.

1.1 ECONOMIC FRAMEWORK OF MALAWI.

This chapter deals with the physical and economic aspects of Malawi. This includes the natural resources available, the type of commodities transported and some of the economic policies adopted. The chapter also provides a transport structure overview and the Lake Transport Service. It is hoped that this gives would the reader a clear picture of the environment in which the Lake service is operating.

Malawi is one of the small developing countries in the Central Africa. It covers an area of 118,484 sq. kilometers. The country has a boundary with Tanzania in the North, Zambia in the west and Mozambique covers the south and eastern part. According to the 1988 census, the population of Malawi is about 8 million inhabitants. About 90 per cent of the total population live in rural areas.

The country has a number of natural resources which are utilised commercially at an international level. There are few minerals being exploited in the country. The Geological Survey Department provides consultancy and advice on various projects at the request of clients in the private sector. Individuals can also bring in different mineral samples for identification. There are coal mines at Kaziwiziwi and Mchenga in the northern part of the country. Research has also shown that there are coal deposits at Nkana in the North

and Mwabvi coalfields in the south. These will be exploited in the future when funds shall be available. Limestone is exploited at Chenkumbi in Ntcheu district in the central region. However, the amount is still not significant enough to satisfy even the domestic market. This is because limestone mining is not done by large companies with heavy machinery and equipment, therefore, this is not exported. Bauxite deposits are found at Mulanje mountain in the southern region. This is not yet exploited due to financial constraints .

Tourism is one of the industries which is developing along the lake and in the hinterland. Malawi has the third largest lake in Africa which is about 568 kilometers long, 60-80 kilometers wide, and about 400 meters deep and it covers an area of 24,208 sq. kilometers. The water is fresh and the climate is favourable for tourism. Tourism is also being promoted within national parks and game reserves. Major national parks include Nyika in the north, Kasungu in the centre and Lengwe in the southern region. Game reserves include Nkhotakota in the centre and Majete in the south. The climate is tropical savanna. The country experiences three major seasons. These include cool dry season which runs from April to July, Hot Dry season from August to November and Hot Wet season from December to March. This climate is favourable to a number of tropical wild animals such as elephants, lions, rhinos, Impalas, Kudu, hippos and many more.

There are few manufacturing industries in Malawi. These include David Whitehead, a cloth manufacturing industry, the Sugar Corporation of Malawi (SUCOMA) which produces sugar from sugar canes, Southern Bottlers Company which makes beer and soft drinks, Lever Brothers Limited manufactures a variety of households consumable goods such as cooking oils

and soap, BAT - Tobacco Industry, Tea Association and cement production at Changalume in the southern region. Agricultural Development and Marketing Corporation (ADMARC) is a statutory body which buys agricultural produce during the harvesting season and sells them during planting season when food is scarce. This is encouraged by the government because ADMARC has suitable sheds in which it stores the produce safely throughout the year. In addition to that, ADMARC acts like an agricultural produce distributing mechanism from the producers to the consumers.

Agriculture is the main source of income for most rural communities. Tobacco is the major cash crop. This is normally grown by large estate farmers as well as smallholder farmers. Other cash crops include, tea, cotton, rice, cashew nuts, groundnuts and coffee. Maize is the staple food of Malawi. Other food stuffs include cassava and rice.

Table 1 ESTIMATED SMALLHOLDER PRODUCTION OF MAIN CROPS.

Crop	Output (tonnes)		%age change 1991 on 1990
	1990	1991	
Maize	1,342,977	1,638,438	22.0
Groundnuts	18,640	30,302	62.6
Cotton	33,026	40,802	23.5
Paddy Rice	44,917	52,548	17.0
Tobacco	14,000	12,150	-13.2
Pulses	71,385	77,402	8.4
Cassava	144,760	120,621	-16.7
Millet	10,113	9,042	-10.6
Sorghum	15,452	18,854	22.0
Sweet Potatoes	94,911	70,246	-26.0

Source: Economic Report, 1991.

Table 1 illustrates the estimated small holder production of some crops in 1990/91. It should be mentioned that the production was lower compared to other years due to the drought during the growing season.

Malawi depends much on foreign trade. According to recent statistics compiled by the Economic Planning and Development in one of their annual publications (the Economic Report 1991) exports volume is going up. The amount by which total exports fall short of total imports, that is the trade gap, decreased by 33.9 from K657.1 million in 1989 to K434.4 million in 1990. This was mainly due to an increase in volume and value of exports. Exports volumes increased by 28.5 per cent on average while export prices increased by 20.0 per cent in 1990. Imports (c.i.f) increased by 13.1 per cent in 1990 as compared to the increase of 33.8 percent in 1989.

Gross Domestic Product (GDP) of 1,022.4 million Kwacha at factor cost and 1,113.7 Million Kwacha at market prices were achieved respectively (1 US dollar is equivalent to approximately 4 Kwacha). "Gross Domestic Product is the crucial element of the Gross National Product. It measures the total final output of goods and services produced by an economy - that is by residents and non residents regardless of the allocation to domestic and foreign claims" [1]. Table 2 on next page shows GDP projection up to 1995.

The major impetus operating on the growth of the economy in the medium term springs from the growth in the medium scale and small scale sector of the manufacturing industries, transport and financial services. According to economic report 1991, manufacturing is expected to grow roughly at 7 per cent per annum over 1992-1995. (In table 2, transport costs are included in other goods and services sector).

The balance of payment is not quite favourable at present. External debt service and transport costs continue to exert pressure on the external sector. This is also because of high interest rates payment on foreign debt. However, the government is trying to improve the situation by revising some of its external trade policies.

Table 2 GROSS DOMESTIC PRODUCT BY SECTOR OF ORIGIN AT 1978 CONSTANT PRICES (K' Million)

Sector of origin	1991	1992	1993	1994	1995
Agriculture	351.6	364.0	374.9	387.0	400.5
Small scale	263.2	267.0	278.0	283.0	293.0
Large scale	88.4	97.0	100.9	104.0	107.5
Industry	208.8	221.9	233.7	247.3	262.0
Manufacturing	137.6	148.3	156.1	165.9	177.4
Electr. and water	24.1	26.1	28.1	30.5	31.6
Construction	45.1	47.5	49.5	51.0	53.0
Other Goods and Serv...	487.6	506.4	529.1	551.4	573.2
Unallocatable Fin. Charg	-23.6	-23.6	-23.7	-25.3	-25.3
GDP at Fact. Cost	1,022.4	1,068.7	1,114.0	1,160.5	1,210.3

Source : Department of Economic Planning and Development .

For example, there is a move towards import liberisation, changes in fiscal and monetary constraints consistent within the Structural Adjustment Programmes set up by the International Monetary Fund (IMF). The problem of balance of payment is often facilitated by growing

depreciation of local currency against major foreign currencies such as the United States Dollar, German Mark, Pound Sterling, French Francs and many more. The inflation rate is almost up to 12 per cent. It is likely that it may continue rising due to changes in internal and external market forces such as the exchange rates and worldwide recession.

As one way of facilitating trade with neighbouring countries, Malawi has joined a number of international organisations including Preferential Trade Area (PTA), the Southern Africa Development Coordinating Conference (SADCC), the Southern Africa Transport Communication Commission (SATCC) and Organisation of African Unity (OAU). The countries involved in these regional organisations include Zambia, Mozambique, Zimbabwe, Botswana, Tanzania, Kenya and Malawi. see map 1. of Southern Africa. Other international organisations include United Nations Development Program (UNDP) and International Maritime Organisation (IMO). IMF and World Bank are also helping Malawi in terms of structural adjustment programme in order to strengthen the economy.

1.2 TRANSPORT STRUCTURE OVERVIEW.

Malawi has all modes of transport. These include road, rail, water and air transport. All these are connected to each other in one way or another. There is a rail line which connects the commercial city of Blantyre to one of main domestic ports, Chipoka, on the southern part of the lake Malawi. From this port, the rail proceed to the border with Zambia through Lilongwe which is the capital city. This rail line also branches to Nacala in Mozambique. The other section from Blantyre, goes down to Beira in Mozambique too. In the northern port of Chilumba, there is a tarmac

FIG 1 MAP OF SOUTHERN AFRICA



road which extends into the hinterland and also has a branch which goes across the border to Dar es salaam in Tanzania (This route from Blantyre to Dar es Salaam via the lake is referred to as the Northern Transport Corridor).

The transport sector as a whole has consistently been the top priority in development planning since independence. Transport accounts for up to 30 per cent of public sector investment. However, the emphasis has been on primary routes and secondary all weather roads. Despite this level of expenditure, the road network is severely underutilised. There are relatively few vehicles in Malawi.

Transport in the rural areas encompasses the movement of people and goods by any means. The only mode of transport available to the majority of rural households is walking and headloading. The constraining effect of lack of transport is clearly seen in the rural areas. A wide range of facilities and services including markets, health centres, schools and post offices are limited in effectiveness by people's inability to travel. Likewise, small businesses are hampered in their operations by inadequate transport facilities.

At the national level, more cargo is transported by road and rail than on lake and air. However at international level, more cargo is transported by air. In 1990, air freight reached 1,158 thousand tonnes while road and rail registered 404, 382 thousand tonnes respectively. This shows that at domestic level a lot more of cargo is transported by road than by any other mode of transport. There is little international cargo transported on the lake presently. However, more work is in progress to improve the situation.

Table 3. DOMESTIC FREIGHT TRAFFIC DISTRIBUTION
('000 metric tonnes)

Transp. Mode	1985	1986	1987	1988	1989	1990	1991
Rail ...	469	533	452	348	297	377	265
Lake ..	37	42	29	25	28	23	19
Road * ..	695	243	163	203	282	279	376
Air	1	1	1	1	1	1	1
TOTAL	1,202	819	645	577	608	680	661

Source: Transport Performance Bulletin, TPU, EPD, pp 3

† The figures on road traffic are only for ADMARC

The statistics on freight traffic are only for ADMARC. They represent a fraction of the total traffic transported by road. ADMARC was the only statutory company which used to buy agricultural commodities such as maize, tobacco and groundnuts, and normally sells the agricultural inputs such as fertilizer, pesticides and seeds. However, since 1987 the situation has changed in that the private sector has also been allowed to buy and sell the agriculture produce from the farmers. The statistics for domestic cargo transported by transporters other than ADMARC are not available because they are not recorded. This is because there is no mechanism as of now to capture that information.

This has lead to reduction of freight traffic carried by ADMARC. It is also a problem now to calculate the exact figure of the cargo transported by road. The total domestic volume of freight traffic handled decreased by 2.8 per cent

in 1991 over that of the previous year. This was due to decreases in the amount of freight by Malawi Railways and Lake Service, which went down by 29.7 per cent and 17.4 per cent respectively. This could be due to the serious drought which hit the country in 1991. (see table 3.)

Despite government efforts in improving the domestic transport network, the country has been facing a critical external transport problem since 1975. This has been due to closure of the external rail lines to the ports of Nacala and Beira in Mozambique. The closure was a result of insurgent activities along the rail lines influenced by the civil war in that country. Although the Nacala rail line was reopened in 1989, external transport is still a government concern because, the route is not fully operational due to rehabilitation work which is taking place. The Beira route is not operational up to now because the rail line is not rehabilitated. Therefore, most of imports and exports are transported by road via Zambia, Zimbabwe to Durban in South Africa or to the port of Dar es Salaam in Tanzania.

The transportation costs by road to and from these ports is just too high for a developing country like Malawi. This problem is also made worse due to an inadequate number of heavy duty trucks to provide the transport of exports and imports to and from Durban. In the early, 1980s the government initiated a multi-modal transportation project to connect Malawi with Dar es Salaam in Tanzania to increase throughput of goods and to minimize the costs. This is the second shortest route to a sea port after Nacala. In conjunction with the Government of Tanzania, it has also established a dry cargo terminal and fuel farm at the port of Dar es salaam and Mbeya to facilitate a smooth flow of cargo.

On this route, the cargo will be moved by rail from the port of Dar es salaam to Mbeya near the Malawi border, then by road from Mbeya to Chilumba port in the northern part of Lake Malawi (see map 2) . From here, the cargo will be transported by lake to Chipoka port in the southern part of the lake before it is distributed in the country. Along this route, the greater part is covered by rail and lake transport compared to the distance covered by road.

The table below shows development expenditure by sector for all modes of transport. The table shows that a substantial part of the government expenditure on transport goes to road construction and rehabilitation. Over the last 3 reported years, the expenditure on rail/lake and other transport modes has been going down drastically.

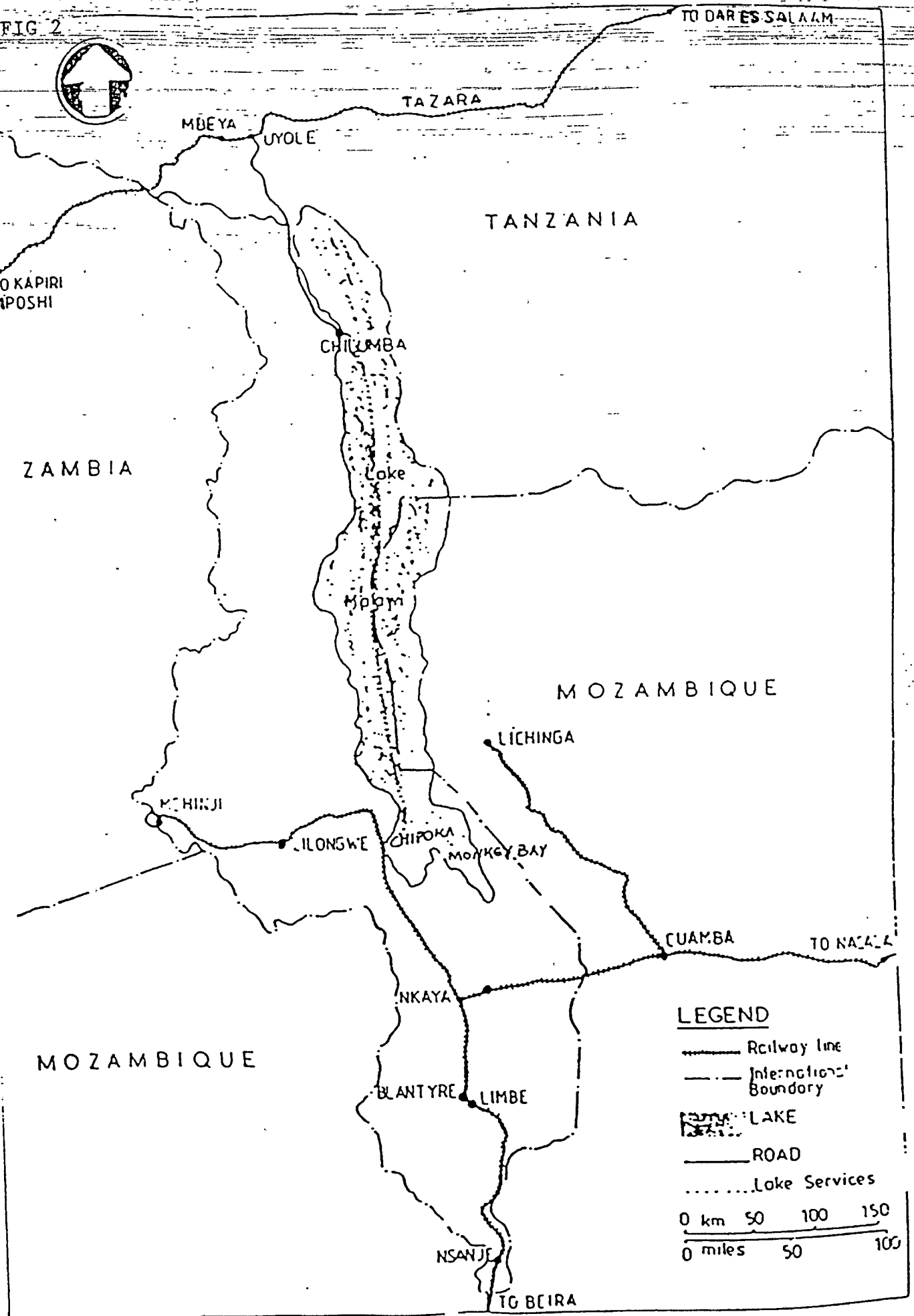
Table 4. TRANSPORT DEVELOPMENT EXPENDITURE BY SUB SECTOR.
(MK Million)

Sub Sector	1988/89 Actual	1989/90 Actual	1991/91 Actual	1991/92 Estimate
Road	34.439	45.472	71.392	89.327
Rail/ Lake . . .	1.377	21.205	8.876	5.800
Civil Aviation .	1.150	3.508	7.780	9.440
Others	35.575	16.372	21.736	3.709
Total	72.541	75.557	109.784	108.276

Source: Ministry of Finance

MAP OF MALAWI

FIG 2



It is now the Government policy to keep all external routes operational. The Government's intention is that even if Nacala and Beira routes are reopened, the Dar es salaam route and Zambian route which goes to Durban should be operational. This is to make sure that there are competitive alternative external routes available.

1.3 LAKE SERVICE DIVISION.

Lake Service is a division under Malawi Railways; while Malawi Railways is a statutory body. The Marine Division in the Ministry of Transport and Communication deals with implementation of government projects on the lake. Implementation of all the government transport projects is carried out by the Ministry of Transport and Communications. The Transport Planning Unit (TPU) in the Economic Planning and Development Department (EP & D) does the appraisal, coordination and monitoring of the lake service projects.

Monkey Bay is the Headquarters of the Lake Service Division. This is located at the far end of the lake in the southern region. This is where major maintenance and repair work takes place. The harbour is well protected from prevailing winds which cause siltation at many ports along the lake. The area is deep enough to allow vessels to come near the shore for drydocking. There are no cargo handling facilities at this port because it is not intended for cargo transportation. Drydocking for each vessel is done once every year for every ship. This is because most of the vessels are very old.

Monkey Bay is also where vessels are assembled. When the ships are purchased abroad, they come in pieces which are later assembled on the slipway. Although the vessels have had sea trials in countries where built, they are tried again to see if they can perform as expected on the lake. They are not given the sea-worthy certificate unless they pass this testing.

Lake Service (LS) is responsible for operating the passenger and cargo ships. Malawi Railways used to employ many expatriates to manage and run the vessels some years ago. However, now, most of them retired or quit leaving many gaps which need to be filled by well trained maritime experts. The Lake Service Division has an inadequate number of qualified employees. Recent statistics from the Transport Performance Bulletin indicates that in 1991 Lake Service employed 484 people. There were 7 masters, 13 deck officers, 152 deck crew members, 24 marine engineers and 46 engine crew members. The rest of the employees belonged to the port section. The actual number required is greater. (Ref. report by chief surveyor in the Ministry of Transport).

All the management decisions concerning the financial receipts and payments used to be dealt with by Malawi Railways in Blantyre until then. Lake Service did not have an accountant until 1992. Only a cashier was available at Monkey Bay since the establishment of the operations over two decades ago. Major capital investments are undertaken by the Government. This is mainly because such projects are very expensive and may require long term financing or donor funding which the government could more easily provide than the company.

Previously, the ports were under the control of Malawi Railways. However, since 1992, the ports have been transferred to the government. There are four main ports along the lake. These are Chipoka, Chilumba, Nkhata Bay and Monkey Bay. Chipoka and Chilumba are the only two ports with cargo handling facilities such as gantry cranes. These two ports are the focal points in lake transportation. Some other cargo handling ports are expected to be developed on the Tanzania and Mozambique territories in the near future.

There are other small anchorage ports where the passenger ships call to load and off-load passengers (see map 2). These are places such as Makanjira, Kaporo and Likoma among others. The passengers board the vessels using boats because there are no jetties. Jetties are projected for development in the future, subject to availability of financial resources.

The lake service Division has different types of vessels in operation. These include normal vessels, tugs, pontoon and barges. Given below are some of the vessels:-

- 3 passenger vessels
- 2 product tankers
- 1 Dredger
- 2 Dry cargo Barges
- 3 Dry cargo ships
- 4 Tugs and
- 1 container vessel (not operational)

Source: Malawi Railways.

The three passenger vessels have the following capacities:- Mtendere 420, Chauncy Maples 180 and Ilala 460 passengers. Most of these vessels are very old. The oldest vessel, Ilala, started its operation in 1951. There have been some proposals to replace some of these old vessels. This decision has been strengthened by recent studies on the Development of Lake Transportation by Southern Africa Transport Coordinating Committee (SATCC) and Danish Development Agency (DANIDA).

The Lake Service Division is undergoing organisational restructuring in order to achieve maximum utilisation of the lake. The division shall have greater autonomy than before so that in the near future it will completely operate on its own and not under the administration of Malawi Railways. This is because of the major problems which the service has been facing as result of lack of autonomy. For example, it has been unable to acquire spareparts without consultations with Malawi Railways. This leads to unnecessary delays in maintenance of the ships and disrupted the business of several customers including the lake service.

The Government is strengthening the company in some of the necessary areas. The government has recently procured a new container vessel as part of the Northern Transport Corridor project. This will increase the capacity of vessels available on the lake. Some of the old vessels are expected to be replaced by new vessels. The main ports (Chilumba, Chipoka) have been reconstructed to handle the containers. Together with donor community including the World Bank and the International Maritime Organisation (IMO), the government has managed to establish a Marine College where cadets and other ship officers are being trained.

Footnotes.

- (1) Chrzanowski Ignacy, (1985) (pp 99) An Introduction to Shipping Economics. Fairplay Publication, UK.

CHAPTER 2

2.0 THE ROLE OF LAKE TRANSPORTATION IN NATIONAL DEVELOPMENT.

This chapter discusses the functions which lake transportation system plays in Malawi. These include cargo freight, passenger transportation and other economic functions which are derived from the use of lake transport. These involve creation of employment, production facilitation, reallocation of resources and facilitation in foreign exchange savings.

Transport is the lifeblood of any economy. Its demand is a derived demand and this implies that transportation service is not an end in itself. Generally, demand for water transport depends upon a lot of factors. For example, it could depend upon the distance between origin and destination of cargo, the volume of cargo and the type of cargo. For example, crude oil cargo from the Middle East to Europe would rather go by vessel than by road or air. It should also be borne in the mind of the reader that the means of transportation have very significant impacts on the social, political and economic development of nations.

The lower the cost for the transport of goods between regions, the greater will be the flow of goods and services. As Benson and Whitehead summarise the point " ..it may bring raw materials to places where they can be manufactured more easily, or finished goods to places where consumers can make best use of them. Alternatively it may bring the consumer to

places where he can enjoy services which are being made available:- the weary to centres of recreations, the young to institutions of education and learning, the bored to places of entertainment etc" [1]. Therefore an ineffective and inefficient transportation system could easily lead to collapse of an economy and the reverse could also be true.

2.1 FREIGHT TRANSPORTATION.

There are few goods being transported on Lake Malawi at present. The lake service acts as a bridge between the producers and the consumers of the goods and services produced in the economy. The cargo moved on the lake is usually composed of raw materials from farmers along the coastal area. There are also few finished products from manufacturers to consumers.

Along the lake, the main economic activities involve fishing, woodcarving and rice farming. A big percentage of the cargo transported on the lake belong to the local inhabitants. These products are usually taken to local markets for sell or buy from there. The cargo may be groceries, maize, dried fish, cement and fertilizer. Some of the cargo transported on the lake is bound for international market via Dar es salaam. This include exports from Blantyre, a commercial city, and Lilongwe, (capital city) which has also an industrial area. These may include tobacco, tea, groundnuts, coffee, sugar, rice and many more agricultural products.

It is important to mention that, although vessels like Ilala and Mtendere are passenger ships, they also carry cargo in separate decks. A study carried out by GITEC reported that, " the yearly capacity of Ilala and Mtendere amounts to 5,850 tons of dry cargo per year out of a total of 73,650 tons

capacity of the entire fleet" (2). While these figures may have changed over the past years, one can still see the proportion of these two vessels, compared with that of the total fleet of 12 cargo vessels. As seen in this table, the volumes of the major commodities transported on the lake has been unstable. The volume has been fluctuating nearly every year for each product.

There are many factors which may have contributed to these results. Internal market forces such as high competition from road hauliers may be one such factor. Some of these may be natural factors such as climatic conditions and others which are addressed later in this document.

Table 5.

FREIGHT TRAFFIC BY MAJOR COMMODITY

Commodity	1985	1986	1987	1988	1989	1990	1991
Cement	3036	863	468	920	127	45	145
Fert	2382	10209	6522	4048	4497	4429	515
Maize	1288	7096	4120	2096	2792	3003	3780
Rice	598	588	1450	1555	881	543	6
Cot Lint	4307	1422	1794	1184	1441	1562	1127
Sugar	2533	4757	370	137	13	36	108
Other traf	15664	8190	9362	9895	17142	18528	13289
Tot Traf	29808	33125	24086	19835	26893	28146	18970
Oil Prod	7203	8537	5246	4721	1215	1213	1992

Source: Economic Planning & Development.

2.2 PASSENGER TRANSPORTATION.

The lake service operates three passenger vessels on a weekly schedule. There is no competition on the lake as far as passenger transportation is concerned. All the passenger trips originate from Monkey Bay in the south to Karonga in the North. There are about fifteen places at which the vessels call between Chipoka and Karonga. The main ports include Monkey Bay, Chipoka, Likoma, Nkhota kota, Nkhata Bay, Chilumba and Karonga. The passenger vessels include Ilala, Mtendere and Chauncy Maples. The Chauncy Maples does not operate regular trips as Mtendere and Ilala do. Despite her reconstruction in 1967, she is there as a standby vessel. Therefore, Mtendere and Ilala make the regular round trips from Monkey Bay to Karonga.

The passengers are classified into three categories. These are 1st class, which consists mostly of tourists, and 2nd and 3rd classes which mainly consists of domestic passenger traffic. 1st class is more expensive than the other classes. However, 3rd class carries more people. During some time of the year, this class is very congested that it is difficult to move around. Lake Service plays a major role in passenger movement along the lake mainly because in some areas along the lake, the road network is not well developed.

In such cases it is almost impossible to reach certain residential areas by motor vehicles, eg. Makanjira. This is mainly due to a range of mountains and hills along some parts of the lake. It should also be pointed out that Likoma and Chizumulu are inhabited islands. Therefore in these cases, lake transport is the sole means of transportation .

However, not all the passengers who travel on the lake lack other alternative means of transport. Some passengers such as tourists travel on these vessels just to have fun and leisure. The cost is relatively cheap compared to some other countries within the region. A great number of tourists come from South Africa and Europe. But some of the other passengers live in rural communities where the income level per year is very low. This makes it extremely difficult for them to pay higher fares that would be needed to reflect the cost of vessel operations. The table below shows the passenger volumes and passenger-kilometers performed from 1981 to 1991.

Table 6. PASSENGER TRAFFIC VOLUMES

PERIOD	PASSENGER ('000) VOLUMES	PASSENGER -KILOMETER PERFORMED.('000)
1981	132.7	18333.6
1982	169.7	21699.3
1983	193.6	24427.1
1984	188.4	21505.6
1985	200.6	23246.8
1986	199.4	21987.3
1987	207.4	22122.7
1988	184.7	19793.0
1989	203.2	23321.0
1990	176.5	17564.9
1991	163.9	17698.7

Source: Transport and Communications Performance Bulletin.

From table 6 on passenger traffic volumes, it could be deduced that the number of passengers transported on the lake has been almost stable from 1981 up to 1991. The number of passengers handled by lake service in 1991 decreased by 7.1 per cent as compared to the previous year. It was only in a few years when the lake service carried a large number of passengers. For example in 1985, 1987, 1989 the number of passengers carried rose up to 200.6, 207.4 and 203.2 respectively.

This is one of the indicators to show that the service performance has not been satisfactory. In normal situations, the number of passengers should have increased slightly or by a significant figure over the past decade. The same case is observed in the Passenger-kilometer performance. The figure has remained almost at 20 million passenger-kilometers per year over the entire period under study. This certainly had a negative impact on the company's net revenues because the operating costs have been increasing at a higher rate.

2.3 ECONOMIC FUNCTIONS.

Lake transportation also contributes to national development through creation of employment and by facilitating the production of goods and services, including savings of foreign exchange earnings. It could also be one of the main factor in reallocation of resources at national and regional level.

2.3.1 Employment Creation:

Assumptions:

- Employment refers to, utilisation of factors of production (capital, land, labour, technology, raw materials) unless otherwise stated.
- Ceteris Paribus - If we assume all other variables being constant.

Lake transportation creates employment in different ways. There is both direct and indirect employment involved in lake transport. Firstly, employment is directly created as the company employs workers to perform different duties within the company. For example, the company employs people to work as ship masters, deck officers and ship engineers. There are also people employed to work in ports as harbour masters, stevedores and others do general duties to mention a few.

These days different shipping lines try as much as they could to employ as fewer people as they can especially in developed countries where labour is very expensive. It is also not the objective of the Lake Services in Malawi to be labour intensive although, labour is not as expensive as it is in developed countries. However, the government considers employment of people by the company as part of national employment creation through its capital investment in ports and shipping line.

The Lake Service indirect employment could be defined as the utilisation of factors of production (ie labour, Capital, land) resulting from the establishment and development of the shipping line on the lake. The indirect employment of factors

of production in all sectors of the economy affects the national level of employment. Professor Goss, in one of his articles on Economic Policies and Seaports argues that "the economic function of an improvement in a seaport is to increase the producers' surplus of those who originate the exports passing out through it; and to increase the consumers' surplus of those who ultimately consume the imports passing in through it . It follows that a measure of the economic efficiency of a port is the aggregate cost of passing cargo through it" (3).

This is true in developed as well as developing countries. He further states that the producers' surplus creates secondary economic activities. This indicates employment of factors of production in those sectors concerned.

Therefore it could be true to say that, *ceteris paribus*, the increase in efficiency of the ports and shipping service would lead to creation of employment in other sectors of the economy. This shows that the development of lake service in Malawi through proper investments in ports and shipping service could improve the national employment level.

Prof. Chris Peteers from University of Antwerp in Belgium takes a different approach which also leads to the same conclusion as Prof. Goss. Prof. Peteers argues that the value added is a contribution to the economy by an industry. It is calculated by subtracting the cost of intermediaries from the total output. The value added for all sectors gives the Gross National Product at factor cost. There is also a positive relationship between the GNP and the level of the standard of living, as well as the level of employment of all factors of production.

Another point to note is that demand for the intermediaries automatically creates economic activities in other sectors of the economy. In other words its demand for intermediary products affects the level of national employment. There could be a long chain of economic and social activities created in the economy due to development of ports and shipping services. This means that due to the improvements in ports and shipping services more employment could be created elsewhere in the economy .

Richard Lipsey in his book; "Introduction to Positive Economics", shows that as the customers get more consumers' surplus they may tend to increase consumption of goods and services *ceteris paribus*. The increase in consumption may lead to a rise in demand. Rise in demand may lead to an increase in production of the goods and services thereby leading to an increase in the creation of employment of factors of production. ie. labour and capital. (Ref. Keynesian Theory of Consumption in the same book 6th Edition.) In some cases, increase in consumers' surplus may lead to change in living standards or consumption style or behaviour and not necessarily increase the commodity demand, ie. consumers may tend to buy more of luxurious expensive goods which they could not afford before. However, the bottom line is that the national level of employment would be increased and this is what the government is always after.

Richard Lipsey also gives a numerical example of how economic activities could be created using the multiplier effect. This is illustrated as follows; " assume that there is an increase in investment expenditure of 1m pounds per year in an economy where the marginal propensity to consume is 0.8. National income initially rises by 1m pounds. That is not, however, the end of the story. The factors employed in producing the new investment goods spend 0.8m pound on

investment goods spend 0.8m pound on consumption and save the remaining 0.2m pound. This second round of spending becomes new incomes for the people making goods that are produced to meet the new demand. These people, in turn, spend 80 per cent of this 0.8m pounds of new income, which is 0.64m pounds of new expenditure . These people spend 80 per cent of their 0.64m pounds ,and so it continues , with each round of new income inducing new round of expenditure..."(4). Therefore each new round of expenditure is associated with creation of employment.

In Malawi, at present shipping is a domestic activity. Most cargo transported on the lake destined for abroad, is also transported by road before or after it reaches the sea coast. However most cargo transported on the lake is produced in Malawi. This means that the producers are the residents in Malawi. Therefore, if the producers' surplus is re-invested, there is direct and indirect employment created at domestic level. The government is interested in the increase in the level of employment created by the shipping and port industry regardless of whether it is in the form of direct or indirect employment.

Employment which is created due to some other activities which are indirectly related to the ports and shipping operations is found widely both along the shore of lake Malawi and in the interior of the country. These could be found in terms of the formal and informal activities. The formal sector includes forwarding and clearing of cargo, cargo bookings, banking and insurance activities. This should not be ignored as part of employment created by the shipping industries. The informal business includes some small scale shopkeeper who run shops, grocery stores and farmers growing crops and animals near the ports in order to sell them to the

employees working at the port authority, or the passengers embarking upon and disembarking from the vessels. These are also people indirectly employed by the shipping line.

2.3.2 Production Facilitation.

Lake transportation has an element of facilitating production of other goods and services. First of all, one needs to realise the following facts: The raw materials needs to be moved from different places to the factories before they are made into finished products and water transportation is the least cost mode of transport compared to other modes of transportation such as rail, road and air: secondly, transport costs are included in the final price of the commodity transported. Therefore, *ceteris paribus*, reduction in transport costs could automatically reduce the final price of the commodity transported. This could lead to high levels of consumption because the goods become cheaper. Local people can now afford to buy the goods they could not afford before. The higher consumption would lead to original stocks running out quickly thereby stimulating the level of production of those goods and services.

In Malawi, like in most developing countries, the majority of people live in rural communities where the income level per person per year is very low compared to those working in towns and cities. This means transportation of cargo by other modes of transport apart from the lake is relatively expensive.

For example, the road freight rates are almost over twice as much as those for lake service. Therefore, Improvement in lake transportation could assure them of

cheaper and easier movement of their produce to local markets where they could sell their products and buy needed supplies. It should also be mentioned that since vehicle ownership in Malawi is very low, those who own them charge the farmers very high freight rates some of which are not even recommended by the government. The same applies to consumers who want to transport their cargo from the market. Therefore reduced freight rates would really increase the demand and supply for the domestically produced goods and services.

2.3.3 Impact on Foreign Exchange Savings.

Foreign exchange earnings are normally used to acquire goods and services which could not be produced domestically. It could also be used to acquire foreign goods and services which could be produced domestically, but in insufficient supply to meet the national demand. These earnings are scarce resources which developed and developing countries are reluctant to mismanage because the cost might be unbearable to the individual government.

Prof. Alderton in his book; Transport Economics argues that "If the Profit = Revenue - Costs is considered, it is worth noting that where individual and private companies are concerned with profit, governments are concerned with the net inflow of foreign revenue".[5]. This just shows that governments are very much concerned with balance of payment. This is because, balance of payment might also determine how much foreign resources the country would manage to demand without being in deficit.

Richard Lipsey says, "When domestic residents buy imports, this is a part of total expenditure that does not go to purchase domestically produced commodity." [6]. In other words, if residents reduce importation of foreign cargo for consumption due to an increase in domestic production, then the government could be saving foreign exchange by the same margin used for importation of the cargo. This is in line with the role of ship transportation. The foreign exchange could be saved directly or indirectly. The first situation (direct) could be when the national vessels are involved in transportation of foreign cargo and passenger and the cargo owners are supposed to pay in foreign currency.

For example, where the vessels are operating between two or more countries, the government could save foreign exchange if we assume that the total foreign revenues including all the shipping line services in that country result in the net surplus revenue. It does not matter whether the shipping line is making profits on foreign services or not, as long as the net government foreign revenue is negative, the government can not save foreign earnings. The government is interested in the net foreign exchange at national level.

Therefore, since in Malawi, a bigger percentage of cargo transported on the lake is domestic cargo, the indirect situation could apply. Referring to the previous section, on production facilitation, it has been noted that lake transportation could lead to lower prices of final products transported on the lake and consequently result in high production. Therefore, low freight rates may lead to lower prices. The lower prices would result in higher consumption of domestically produced goods since they become more affordable by local communities (Theory of Demand).

The increase in consumption of domestically produced goods may lead to a reduction in foreign exchange used in importation of those goods. In other words, assuming that the country has net foreign exchange then there could be saving of foreign exchange earnings which would have been used to import goods and services to supplement the domestic supply which was inadequate to meet the domestic demand.

It should also be noted that the use of lake transportation would result in less foreign exchange spent in buying fuel and oils. This is because vessels have less fuel consumption per unit of energy to move same weight of cargo, compared to the other modes of transport such as trains and trucks. Another point to argue is that although, lake transportation requires huge investment, the maintenance costs can not match with that of road and rail respectively because there is no maintenance done on the water. The maintenance costs for roads and rail are relatively very high and continue to rise every year.

In lake transportation, there is no need to incur passage construction costs such as those incurred in road construction and road rehabilitation which is done constantly throughout the entire life period of the road.

However, port construction costs might be the same as the inland depots where cargo is transferred to another mode of transport or stored. In this case, the opportunity cost of having lake transportation is less than that of road and rail.

2.3.4 Reallocation of Resources:

In most developing countries valuable resources are underutilised because of misallocation. These resources could be in terms of human as well as natural resources. This tends to reduce the productivity of the resource at the national as well as regional level. In this case, lake transportation could play a very significant role in allocating the resources and technology to where they could be fully utilised at low cost. This could be done at national and international levels because the lake is shared among three countries.

It is also important to note that, although, Malawi and the neighbouring countries have similar climatic conditions and products, there could be differences in cost of production due to technology adopted by each country. In this region, some countries could have comparative advantage in production of some products. For example, in Tanzania, the main cash crop is sisal and coffee while in Malawi, the main cash crop is tobacco. Therefore, if each country could specialise in products which it has comparative advantage, the lake could act as a low cost means of transportation in reallocation of the resources. However, this could only work out for products which each country has comparative advantage in production and the product is also in demand in the other country.

Many critics have argued that this idea of comparative advantage is not valid in practice because of various factors involved. It has been emphasised that this would lead to total dependance on other countries for commodities which a particular country is producing at high cost. Another problem also rises due to differences in value of the products each country is producing. For example, if one country is producing

agricultural products while the other is producing manufactured goods such as videos, the idea of comparative advantage can not hold. This is because the country which depends on agricultural produce for exports would always be in deficit because its commodities are of low value when compared to the one producing the videos.

Although no country wants to be totally dependant on other countries for products it is producing at high cost, it is necessary to realise that specialisation could lead to increased production of goods and services. The quality of the products could be improved. Consequently productivity of labour could rise. Countries involved could realise higher national incomes due to increased exports thus leading to higher standards of living among the people in that region.

Footnotes.

- (1) Benson, D and Whitehead, (1975), (pp1), Transport and Distribution, Longman, London, United Kingdom.
- (2) GITEC report, (1982), (pp 7), Feasibility Study on Northern Transport Corridor, Malawi.
- (3) Goss, R (1990), (pp 211), An Article on Economic Policies and Seaports: Economic Functions of Seaports, University of Wales.
- (4) Lipsey Richard, (1979), (pp484), An Introduction to , Positive Economics, Published by Harper and Row, USA.
- (5) Alderton, P, Prof. (1973), (pp 100), Sea Transport: Operation and Economics, Thomas Reed Publication, London, UK.
- (6) Lipsey, R, (1979), (pp 509), An Introduction to Positive Economics, Harper and Row, USA.

CHAPTER 3

3.0 AN OVERVIEW OF THE TRANSPORTATION COSTS, PROBLEMS.

Operating cost is a very crucial part in running any type of business. This chapter discusses some of the operating costs incurred in lake service transportation. The main costs in lake transportation are not different from those incurred in sea or inland water transportation. There appears to be no global standard for classifying costs incurred in water transportation. However, different companies have adopted different methods for classifying the costs. These are mainly due to the differences in accounting procedures. However, normally, they could be divided into port expenses, running or operating costs and capital costs.

Some economists categorise them into fixed costs and variable costs. Fixed costs are those which do not vary according to changes in production of the service, while variable costs are those which vary according to different levels of production. This may be confusing, in that fixed vary costs could as well, according to levels of production in the long run. For example, insurance is considered as a fixed cost; however, it may change depending upon the amount of assets insured. This brings in a third category which is known as the semi-variable costs. This chapter also discusses the problems which the service faces, for example, ageing fleet. This has caused a lot of concern both to the company and the

government. Other problems include, lack of effective handling facilities at the ports, high competition from road service, unpredictable climatic conditions and inadequate trained personnel in the system.

3.1 Port expenses.

The existing charges at the port include the pilotage charge, berth fees, loading and discharging costs. Previously, all these were not applicable because the ports were under the same company operating the vessels. The government took over the responsibility for running the ports, from Malawi Railways in 1992. Since then, the ports have been run by the Ministry of Transport and Communications. Therefore, the government controls the infrastructure at all the ports, the dredging, and the maintenance of handling and storage facilities. The following rates apply if a ship calls at any port:-

Table 7. Port Charges. Berthing Fees. (in Kwacha)

Vessels (grt)	Rate per Tonne per hour.
0 - 50	0.20
50 - 200	0.35
200 - 500	0.45
500 - and above	0.50

Source : Ministry of Transport & Communications

3.2 Running Costs.

These are also known as the operating costs. They may involve costs for bunkering, crew costs, repairs and maintenance, stores and lubricants and administrative costs. Administrative costs may involve management cost such as communication expenses on shore and offshore such as stationery, phones and telex. It is argued that, "the data for administration costs is perhaps the most difficult of all the costs to analyse and compare rigorously because the term administration is a wide topic in shipping..." [1]. This is mainly because vessels could be owned by one company, managed by another and operated by a third company.

This is a similar case with Malawi Lake Service, for it operates the vessels owned by the government while Malawi Railways does the management. The quality of the management is very important in shipping. John M. Downard emphasises that, "the inadequate administration ashore, both directive and supportive can result in higher costs in all areas." [2]. Table 8 indicates that fuel and salaries are the major direct costs in the operations of the lake service. The cost of fuel is relatively higher when compared with other costs. In this case it is approximately twice as much as the maintenance and repairs. If this is compared with others companies in developed countries, there is a major difference in that capital cost is usually the major operating cost (ref. Alhmarks lines, Erik Thun in Sweden). This is because normally vessels are used according to their life span. It is in very rare cases that vessels are kept for a long time after their economic life span is over. Usually they are put on sale after that and a replacement vessel is purchased according to the company's plans. Therefore, the capital cost has to be paid back within a limited time. Their vessels also do not have

annual refits. Instead, they are normally sent for drydocking after every two years. However, before drydocking, the vessels may go for underwater cleaning, especially if it is necessary to do so. This has an advantage in that it reduces the time and costs for maintenance.

The system adopted by Malawi Railways for categorising the operating costs is also not very informative as compared to other systems. It is difficult to know what is involved in items such as personnel social and personnel indirect. It is the writer's views that this should have been part of salaries and wages. Items such as insurance are taken into account and yet they are not shown on some expenditure sheets.

Expenses on "others" is far much greater than the maintenance and repairs expenses and yet it is difficult to know what it is comprised of. This needs to be broken down in order to achieve a better financial analysis. All these may impose difficulties in interpreting the operating cost data. Therefore, there is need to come up with a more clear system for presenting the operating costs.

Table 9 illustrates a more informative version which could be used to classify the operating costs. The importance of this version is that one can easily calculate the operating cost per ton which is the basis for freight rates. In other words the freight rates calculated based on cost per ton covers the costs and could easily be justifiable.

TABLE. 8 LAKE SERVICE OPERATING COSTS (K'000)

Item	YEAR				
	1988	1989	1990	1991	1992
DIRECT COSTS:					
Salaries & wages	845	838	1106	1215	1433
Repairs & Maint.	378	742	562	588	282
Others.	559	559	631	567	767
Diesel fuel	1791	1910	1289	1255	1595
INDIRECT COSTS					
Personnel-social	87	75	118	94	115
Personnel- Indirect	71	73	78	85	103
Ancillary veh. cost	73	66	59	55	68
OVERHEADS					
Accommodation	63	101	106	135	237
Administration	187	187	186	233	314
Interest & Deprec.	141	445	373	364	366

Source: Malawi Railways, Accounts Section

3.3 Capital Costs:-

Figures from Table 8 indicate that the capital cost has not been stable for the period 1988 to 1992. These are interest charges on the bank loans and mortgages if the vessels, cranes and other equipment were purchased using funds borrowed from banks or financial institutions.

Depreciation is also a cost charged on the capital investment. This is defined as a reduction in the value of an asset as a result of wear and tear of the machines and equipment. As an asset losses value, there is need to reduce its book value in line with the estimated loss. In table 8, interest and depreciation are combined together. This is not desired as it makes it difficult to assess the changes in either of the two.

Table 9 A MODEL OF COST BREAKDOWN TO FIND COST/TON.

Descrip.	Year Cost	Day Cost	Voy. Cost	Cost/Ton
: Manning	: ###	: ###	: ###	: ###
: Stores/Lub	: ###	: ###	: ###	: ###
: R/Maint	: ###	: ###	: ###	: ###
: Insur.	: ###	: ###	: ###	: ###
: Admin.	: ###	: ###	: ###	: ###
TOTAL	: ###	: ###	: ###	: ###
: Deprec.	: ###	: ###	: ###	: ###
: Intere.	: ###	: ###	: ###	: ###
: Bunkers			: ###	: ###
: Port Exp.			: ###	: ###
GRAND TOTAL			: ###	: ###

Source: World Maritime University.

In Malawi some of the vessels like Chauncy Maples have gone beyond their expected lifetime although they are still being used. This ship was built in 1899 and went into service in 1967, Ilala was built in 1949 and went into service in 1951. Although these vessels are re-built, they are not efficient. Calculation of depreciation does not reflect the actual loss in value due to wear and tear. This poses a safety problem as well as a financial problem in that the cost of maintenance and repairs may not match with the revenues being generated. There is also a risk of spare parts not being available because of changes in manufacturing models . Given below is the formula being used to calculate depreciation in that company:-

$$\text{Annual Depreciation} = \frac{\text{Cost Price} - \text{Scrap Value}}{\text{Estimated lifetime (yrs)}}$$

3.4 Lake Transportation Problems and Weaknesses.

Apart from the normal costs incurred in operating the vessels, Lake Service Division faces many problems that need immediate attention. As one way of trying to resolve some of the problems, the company is being restructured. The following are some of the problems faced.

3.4.1 Ageing Fleet.

As explained above, most of the vessels are old and inefficient. Therefore, the cost of operating them is relatively high. This is because they frequently breakdown and the spares for maintenance are sometimes difficult to find.

- (1) First, the Lake Service has to order the spares through Malawi Railways. In some cases, Malawi Railways delays the acquisition of the spareparts.

- (2) Second, in some cases the spare parts may not be readily available at local markets and have to be imported from abroad. This may take a number of weeks or months. If the spare part is the crucial one then the vessel may cease its operations until the spare part comes.

All the delays prolong the vessel's maintenance period. In some cases a vessel could stay in drydock for more than a month. This is a problem in that it has an adverse effect on the flow of revenue on the part of the company and the shippers. The unreliability of the vessels result in shippers and passengers losing their confidence in the company.

3.4.2 Lack of Effective Handling Facilities.

As explained earlier in this paper, the Lake Service has been under Malawi Railways for a long time. This means that whenever there was need to purchase handling facilities and spare parts the final decision was not made by Lake Service itself. Unfortunately, Malawi Railways did not balance the investments on rail and lake. Much of it went to rail which was making more money by then. As a result of this reason, lake service has had inadequate and ineffective handling facilities.

The vessels as well as the ports do not have enough facilities. Most cargo transported on the lake is manhandled. This has been very inconvenient since it has contributed to delays in loading and unloading. Manhandling has also been source of damages to cargo. In order to emphasize the point, it is important to mention that during the writer's interview with some Malawi Railways officials, it was noted that one of the major shippers (Southern Bottlers) had withdrawn its contract with Lake Service because of increased damages caused by poor handling.

The lack of appropriate handling facilities has also been a source of delays in loading and unloading of cargo. This has had great consequences for the entire trip as explained in the proceeding chapters. In some areas such as Likoma, Nkhotakota and Kaporo. There are no jetties and no convenient superstructures for passenger services. This imposes safety risks because passengers are carried by boats and canoes when embarking and disembarking the vessels. In stormy weather conditions, passenger comfortability and safety. This might have some negative effects on the demand for the passenger vessels.

3.4.3 High Competition From Road Hauliers.

There are different reasons for this competition. As it can be seen on Map 1, the geographic shape of Malawi, is elongated. The Lake too, follows this shape from north to south. Therefore, competition exists with the main road infrastructure which runs pararell to the lake service.

The reason for stiff competition with the road service, is that over 50 percent of the domestic consignments transported in Malawi is small in size. For example, most farmers are smallholder tobacco farmers. They could manage to transport their produce by trucks down south or up north depending upon the location of the auction market.

Other typical cargoes include groceries for small scale enterprises and products owned by big companies which are to be distributed to local shopping centres. This makes it possible for road hauliers to compete with Lake Transport. The latter operates at a disadvantage since it can not attract the huge consignments required to make its trips more economical. However, the reverse happens when the big companies and firms are shipping large cargo in the form of imports and exports.

Another reason for this competition could be that road transporters are able to move from the southern region to the central or northern region within a few days while the vessels take longer. Therefore it becomes convenient for shippers to select road transport for perishable or high priority goods, which is faster than Lake Service especially if their cargo is small. In normal situations, a return trip from Monkey Bay to Karonga and back, takes about 7 days by lake while it could take as little as 2 days by road. It should also be born in

mind that shippers have to pay higher insurance premiums if the cargo is a long time in transit. Shippers also stand a chance of losing customers due to delays in the delivery of their products.

3.4.4 Unpredictable Climatic Conditions.

Climate has been one of the factors affecting the lake transportation in different ways. First, this has affected the variation in cargo and passenger volumes transported in the following manner: There is one planting season and one harvesting season, therefore, cargo volumes are much higher in the harvesting season than in the planting season. The cargo volume during the year is directly dependent upon the fluctuations in seasons. The number of passengers is smaller during the rainy season for most of the people are working in their fields. In the dry season, when these people go to market, the number of passengers increases. Therefore, since more than 75 per cent of the passengers are local inhabitants, the level of passenger volumes is heavily influenced by variations in seasons.

For example, recently in 1991 there was a drought which resulted in a poor harvest. Since most of the cargo transported is agricultural produce, (ie, tobacco, maize, cotton, tea) this had a great negative impact on the cargo volumes transported. Such climatic incidences affect the performance of the service in that if the cargo volumes go down it means the frequency of the trips too will be reduced.

This is a serious problem in that it affects the revenues of the company which are required for the maintenance and upkeep of the vessels. In the same year, apart from reduction

due to low volumes of cargo, the company had to adjust its schedules due to a lowering of the water level in the lake. Some ships could not manage to call at some loading and unloading ports because the water depth was too shallow for them to berth. For example, at Chipoka, the water level dropped by a wider margin. This was the primary cause for the delayed the normal operations of the container vessel.

3.4.5 Inadequate Service Promotion.

There has been inadequate promotion of the lake as a means of transport both at the national and international level. For the domestic market lake service is in competition with road transporters and the Lake Service has done very little, if anything to promote itself. There is need for it to do a lot of marketing in order to create enough demand both in passenger and cargo transportation.

It is important to note that although the lake is partly shared with other neighbouring countries, ie. Tanzania and Mozambique, there is a very insignificant amount of foreign cargo in transit passing through the lake to any of the neighbouring countries mentioned above. All the cargo in transit to other countries goes by road rail and air. Most shippers do not have enough knowledge about the operations of the vessels. For example, some of them are not aware of the operating schedule, neither do they have knowledge of the benefits they could derive by transporting their cargo on the lake. This has led to decreased number of consignees and the volume of cargo. Therefore, there is need to strengthen the commercial department of the company. The weakness of a commercial department would likely result in higher costs for any company, especially when there is competition.

3.4.6 Lack of Trained Manpower and Training Facilities.

The Lake Service company is still suffering from the lack of experienced and well trained personnel. This is because it has been unable to attract new experts or retain the old staff due to unsatisfactory working conditions. Recently, a number of employees have quit the company to join the government and other companies related to transportation. The government has made efforts to try to keep the system on track through the provision of a local training institution mechanism. However, the Marine Training College mentioned earlier is not fully operational due to the lack of adequate training facilities. There is need to build well equipped laboratory for the marine engineers to have practical lessons in shipping.

3.4.7 High Inflation

It is important to realise that most transport industries these days are affected by the high inflation rates. In Malawi, the inflation rate is about 12 per cent. This is high enough to cause a lot of havoc as far as Malawi economy is concerned. This is because different inflation rates could have different consequences in different economies. This adversely affects the Lake Service company in various ways. The prices for materials to run the vessels such as oil and lubricants are always rising. This makes it difficult for the company to cope with the daily running costs. The costs for new assets continue to rise making the possibility of replacement less likely. The domestic currency is depreciating rapidly against foreign currencies such that

there is need to increase the amount of savings for buying similar quantities of spareparts which few coins were able to purchase previously. This affects the quantities and quality of the spare parts being imported.

The passengers and commodity consumers may also feel the effects of inflation because the cost of transportation must be reflected in the fares and freight rates. The problem is that if this is too much, they may look for alternative means of transportation. This is a danger in that it may lead to reduction in cargo and passengers transported. It is important that inflation is carefully accounted to preclude overstating the profits.

If this could happen, then investors may expect a distribution of dividends in excess of what is exactly required. The employees in the company may also demand a higher share for salaries because higher profits are usually associated with higher wage pressure. This may happen in the long run because as of now the company is facing severe losses such that it is almost impossible to realise any profits.

Footnotes

- (1) Alderton, P, Prof. (1973), Sea Transport: Operation and Economics, Thomas Reed Publication, London, United Kingdom.

- (2) Downard, J.M., (1981), Running Costs, Fairplay Publication, United Kingdom.

CHAPTER 4

4.0 EVALUATION AND ANALYSIS OF THE LAKE TRANSPORTATION.

This chapter evaluates and analyses the costs and problems the service is facing. The analysis includes Linear Regression as part of econometrics theory to obtain the correlation between the cost and revenues. Graphical illustration is also used as another way of clarifying the relationship which has existed between the costs and revenues over the period 1978 to 1991. In some cases, descriptive analysis is used because it is also almost impossible to fix a numerical value on the cost of some problems. For example it is difficult to put an exact numerical value on the cost which is due to lack of trained personnel and lack of appropriate handling facilities without a detailed research of these issues.

4.1 OPERATION EVALUATION

The operations of vessels can be divided into two sections. These could be the technical operation and the commercial operation. In Malawi, the technical operation is mainly done by the Lake Service Division at Monkey Bay because thus where the ships are based and the technical staff is located while commercial section is located in Limbe. The technical operations involve the activities such as checking amount and quality of fuel, speed of the vessel, water supplies, lubricants, maintenance and repairs, condition of the hull and the engine.

The Malawi Railways which is located (in Limbe) is responsible for controlling the commercial operations. It deals with marketing of the services, freight rates formulation, research, budgeting and scheduling of voyages. These are some of the factors that affect the operation performance. However, it is important to consider first whether the ageing fleet has really been one of the major cause of poor performance over the past decade.

4.1.1 Ageing Fleet.

Basically, the ageing fleet has been given as one of the main problems causing poor performance among the passenger vessels. According to Malawi Railways this has had adverse effects on the maintenance and repair costs, ton-km and passenger-kilometers performed. The poor performance has in return affected the revenues. The table below illustrates the names of vessels, year built and year placed into operation.

Table 10 INVENTORY OF CRAFT - 1991

Vessel	Year of Constr.	Year into Service
Chauncy Maples *	1899	1967
Mpasa	1935	1935
Ilala *	1949	1951 rebuilt 1990
Nkhwazi	1954	1954
M. L. Ncheni	1957	1957
Dredger (SECARE)	1971	1976
Karonga	1975	1976
Ufulu	1983	1984
Mtendere *	1980	1980

Source: Transport Performance Bulletin, EPD.

* passenger vessels.

Table 5. cont' TUGS

Zomba	:	1947	:	1947	:
Thyolo	:	1947	:	1947	:
Mulanje	:	1947	:	1947	:
Dowa	:	1947	:	1950	:
Viphya	:	1976	:	1984	:

Table 5. cont'. OIL PONTOON BARGES

Barge 91	:	1950	:	1950	:
Barge 201	:	1956	:	1956	:
Barge 203	:	1956	:	1956	:
Barge 300	:	1966	:	1966	:
PONTOON(600 Ton):	:	1976	:	1984	:

Source : Malawi Railways.

During an interview with MR officials, it was noted that Chauncy Mapples is a standby passenger vessel. It only operates whenever, Ilala or Mtendere has broken down or its on annual refit. Mtendere was built in 1980 and started its service in the same year. Ilala, although it was built in 1949, it was launched into service in 1951. In 1990 it was rebuilt so that the maintenance costs should be minimised. Therefore, the expected economical life time of these two passenger vessels is increased. Assuming that the vessels' economical life span is renewed then we can say, ageing is not a main reason for poor performance. Table 8 has also shown that cost of maintenance is relatively lower compared to the

cost of fuel and salaries. This also indicates that ageing is not the major problem although it is one of the problems which needs to be resolved.

Table 11

LAKE TRANSPORT SYSTEM: JOURNEY TIME BETWEEN MAJOR PORTS

Section	(KM) Distance	(Hours) Running	Waiting	Total Time
Monk.-Chip via Makanjira	114	7.00	2.00	9.00
waiting at Chipoka			4.30	4.30
Chip.-Nkhat via Likoma	389	19.00	3.00	22.00
waiting time at Nkhata Bay			8.30	8.30
Nkhat.- Chil.	151	8.00	4.00	12.00
Monk.- Chil.	654	34.00	22.00	56.00

Source: Malawi Railways : as per published time table
(Mv Ilala - North Bound)

It was also noted during the interview with Malawi Railways officials, that average speed for the vessels operating on the lake is about 9-10 knots. However, if average speed is calculated from the time table given on table 11 using the formula:

$$\text{Average Speed} = \frac{\text{Distance}}{\text{Running Time}}$$

The Av. speed (114/7) = 16.3 Km/hr from Monkey Bay - Chipoka
(389/19) = 20.5 Km/hr from Chipoka - Nkhata Bay
(151/8) = 18.9 Km/hr from Nkhata Bay - Chilumba.
(654/34) = 19.2Km/hr from Monkey Bay - Chilumba.

In all these cases, if the speed is brought to the nearest significant figure, it shows that the vessel travels at approximately 20Km/hr. However, the vessels on lake Malawi do not travel at such high speeds. Therefore the figures given in the time table are not correct. The difference between 10 nautical miles and 20 km/hr is just too big to be a marginal error.

The time spent in waiting at the ports is also too much. For example, referring to the table 11, waiting time at Chipoka is 4 hours and at Nkhata Bay port is 8.30 hrs. Whatever the vessel does during all that time, one of the conclusions that can be drawn from this analysis is that inefficiency exists on the part of management and the personnel involved in operations. This discourages passengers who want to travel by those vessels. A passenger vessel waiting in port for 8 hours would make passengers lose their faith in the service unless there is a genuine reason for this

such as an unexpected breakdown. It is likely that inappropriate scheduling of vessels has been one of the main reasons contributing to poor performance of the passenger vessels. This could also be the reason why the vessel Ilala takes 6 days from Monkey Bay to Karonga and back. There is too much time wasted in transit. Assuming that there is no much time wasted in ports this trip could as well take about four days.

The Unit Cost.

Referring to the table below, the operations indicates that since 1983, the cost per ton-kilometer has been lower than the revenue per ton-kilometer except in 1986 and 1988. On the other hand, the cost per passenger-kilometer has been higher than the revenue per passenger-kilometer leading to loss. This also shows that the marginal cost has always been higher than the marginal revenue throughout the entire period on the table. Given below are formula used to costs per unit kilometer.

- Total Ton-Kilometers = Tonnes Carried x Kilometers Performed.

- Passenger-Kilometers = Passengers Carried x Kilometers operated.

$$\text{Cost per ton-kilometer} = \frac{\text{Total Cost}}{\text{Total ton-Km Performed}}$$

$$\text{Cost per passenger-kilometer} = \frac{\text{Total Cost}}{\text{Total passenger-Km Performed}}$$

Table: 12

LAKE TRANSPORT SYSTEM
FREIGHT AND PASSENGER UNIT COST AND REVENUE
(in Tambala)

Period	per Ton-Kilometer (Freight)			Per Pass-Kilometer		
	Oper. Cost	Oper. Rev	Gr.R.	Oper. Cost	Oper. Rev	Gr.R.
1983	7.69	11.63	3.94	4.94	1.70	(3.24)
1984	12.68	13.53	0.85	5.56	1.97	(3.89)
1985	10.71	12.20	1.49	6.98	2.14	(4.84)
1986	13.94	12.55	(1.39)	6.49	2.49	(4.00)
1987	10.23	13.34	3.11	8.17	2.96	(5.21)
1988	15.99	13.30	(2.69)	9.27	3.43	(5.84)
1989	16.56	17.42	0.86	9.6	4.0	(5.60)
1990	15.06	18.15	3.09	7.89	5.24	(2.65)
1991	21.22	22.6	1.38	13.58	5.39	(8.19)

Source: Transport Performance & Communications Bulletin.

There are a number of factors that could have affected the unit cost in vessel operations. These need to be considered whenever the company is trying to minimise the unit cost. The following are some of the factors that might have affected the unit cost for the both cargo and passenger vessels on the lake.

- (i) Degree of utilization of ship's deadweight capacity. If the deadweight capacity is not fully utilized, the cost per ton-kilometer is likely to be higher than when the load factor is high.

Insignificant increase in passengers volumes and cargo transported over the past decade meant underutilisation of the deadweight resulting in high unit costs. Therefore, there is need to take appropriate measures which could reduce the unit cost. For example, there could be more research done in new commodities which could be shipped.

- (ii) Distance (in kilometers) performed in a particular year also has effects on the unit cost. If a long distance is covered with fully loaded vessel the unit cost could be lower than when the distance covered with full load is shorter and the rest is an empty run.

In table 6 it was also noted that the ton-kilometer and passenger kilometers over the past decade did not improve significantly. Assuming that cargo and passenger availability is going to improve, there is need increase the kilometers performed. In order to achieve this there is need to improve promotional aspect of the service and increase frequency by reducing the time in port. This could be done by improving managerial skill and the handling facilities. The distance covered could be increased by improving the diagonal routes rather than straight forward movement. For example calling at mozambique ports.

- (iii) Number of voyages made in a year also contribute to the unit cost as it affects the kilometers performed in a year. (this is related to ii, iv)

(iv) Time of loading and discharging in port which at given speed determines the number of voyages in a year. As it has been seen in this analysis, lake service vessels spend alot of time in ports. (refer to the waiting time in table 11). This has to be eliminated in order to improve the unit cost.

It has already been observed that fuel and salaries have been the major costs for Lake Service (see table 8). Salaries may not be easy to control because it is usually influenced by internal and external factors such as inflation. However, in cases, where it covers aspects like basic pay plus overtime, social security, special work payment, leave pay, bonuses, travel cost, trade union dues and clothing, it could be possible to minimise some expenses by reducing some costs other than the basic pay if necessary. ie. overtime payments. It is difficult to say which ones are not necessary because different company may have different priorities.

Lake Service statistics also indicate high fuel costs. This may be aggravated by factors such as uneconomical engines especially due to the old age of the vessels. What may be required to minimize fuel consumption would be operating at low speeds. The increase in speed may raise the fuel consumption at an exponential rate. However, if the high costs in fuel is due to higher prices, then there is very little Malawi Railways can do. May be it could negotiate with the suppliers for lower prices. However, if the high fuel cost is due to high fuel consumption resulting from poor engine performance then the effective option could be to replace the old vessels whose economic life span is over, by new economical vessels. Another option could be re-engining the old vessels. It depends upon which is cheaper and most effective.

Regulatory measures for speed and underwater cleaning of the hull should only be regarded as temporary measures which can not be relied upon in long run. Operation of old ships has an adverse effects on the financial status of the company since maintenance and repair costs are usually higher when compared with those for new vessel.

Other factors affecting the passenger volumes:

It is important to examine factors that affect the passengers choice for transport mode and cross-check them against the services provided by the lake transport. This is because those are some of the basic reasons which might have been affecting the passenger volumes. Given below are some of them:-

- (i) Convenience or ease of access and utilization. This means availability when required or in time of need. According to research done January, 1993, there are occasions when all three passenger vessels are out of service for repairs ie. January 1993. This shows that the vessels are not always available.
- (ii) Reliability - The assurance of arriving at the destination. This involves the travellers confidence in ability of the vessel to keep its schedule. This affects the travellers because the vessels are delayed in ports for too long. It is also important to note that while vessels could be reliable, they may still not always guarantee arrival at the exact or appropriate time involved in the operation ie. weather condition.

(iii) **Confortability:** It should be noted that standing is very tiresome compared to being seated while travelling on a vessel. Here, I should mention that the main problem with Lake Service passenger vessels is that they are very small in size. Therefore, there is congestion, especially in the third class which having the lowest fare for local residents means that some do not even have chairs to sit on.

The underutilisation of vessels discussed above occurs mainly during the planting and growing season when most people are busy working in their agriculture fields. This takes greater part of the year because people start working in their fields soon after harvesting and selling their produce. This begins in June to September. In October they start preparing gardens and in November they start planting. Therefore between May and September, there is congestion in the third class of the passenger vessels.

Another reason for the increased level of congestion in third class is that passengers who are local residents along the shore or even from the interior of the country, normally travel with personal effects. These could be small bags of maize flour, cassava, rice, bananas and other small parcels. These are intended as gifts to present to the relatives or friends who have invited them, or are intended as a good will gesture to those they intend to visit. This is done as a tradition in Malawi, as well as in other African societies. Lack of confortability in the third class has had adverse effects on the potential demand for lake transportation by those who can not bear these conditions because they tend to choose other modes of transport unless there is no option available.

(iv) The final factor to be noted could be "time" taken during transportation. This has already been discussed. As stated earlier in the chapter, some of the passengers are local businessmen going to the local market along the lake, ie. Karonga, Salima, Nkhota kota, Nkhata Bay etc. Sometimes, they do not want any delay because they want to return on the same day or the following day or because their business is urgent and a delay might cost them a lot. On the other hand, as already said, it takes about 6 days to for passenger ship to make a return trip from Monkey Bay to Karonga which is the last port in the north.

However, if one goes by bus it could take half of that time. Therefore riding the lake service vessels which are very slow is not convenient for them. Therefore, they may decide to take other modes of transport such as express line buses or personal cars. This is the main area where Lake Service is not competitive and is really in need of much improvement. Even if Lake Service could be given brand new vessels, with current inefficiency in management, it cannot compete with road hauliers. This contributes to the lower than the expected number of cargo volume transported.

MANAGEMENT EVALUATION.

Effective management in shipping is a most important areas to ensure profitable operations. (The term management is used interchangeably with ship administration in this document). Ship administration could be divided into two parts. The first is "Husbandry" which Prof. P. Alderton in his

book, *Sea Transport- Operation and Economics* defines as keeping the ship provided with required crew personnel, necessary supplies and stores, and technically in good condition to ensure its seaworthiness.

The second part of management is done in routing, scheduling and finding cargo and passengers. In developed countries, with maritime tradition, these two aspects are normally done by different companies. This makes it difficult to collect and analyse data on ship management.

However, in Malawi, this is done by one company because the company is smaller compared to big companies in developed countries such as Norway, Britain and Germany, to mention a few. The management of the Lake Service is incorporated in the general structure of Malawi Railway. Its success is overshadowed by the serious problems that the Lake Service is facing. Some of the management problems have already been mentioned.

However, a central weakness of the Lake Service is that it has failed to provide a door to door service. This is because Lake Service does not have trucks of its own or made contract with truck owners to transport the cargo from its origin to the ports and from the other end (of ports) to its destination. Even where traffic is generated on or near the lakeshore, ie. Dwangwa for sugar, molasses and ethanol, and Livingstonia for coal, Lake Service has failed to secure any part of this cargo. In the case of sugar in Dwangwa, this is said to be due to poor access from the lake. However, this reflects a failure by Lake Service to satisfy the potential customer during the trial run.

It is also noted that " dissatisfaction was expressed by other customers dealing with cement, sugar and general distribution sector"(1). It is also mentioned in SATCC report (1991) that Lake Service rates are lower per tonne/km than road service rates. Nevertheless the major concern of management in the short and medium term should be to transform the current inefficient and loss-making services into attractive services to secure the financial survival of the shipping operations.

The need to move cargo by lake and road service as one section can also make the average rate competitive with road rates. Additionally, the poorer service quality and slower transit times associated with lake service, could also greatly be improved taking the average transit time. The question one has to ask is why do we have poorer quality service and slower transit time ?

Lack of trained personnel.

Lake Service needs to employ and keep highly competitive crew members and managerial staff. The existing managerial staff should be self motivated and creative in order to improve the services. It is the belief of the writer that the poorer performance of the Lake Service is to a greater extent due to a lack of trained personnel rather than any other factors such as ageing fleet, stiff competition, lack of handling facilities and others as mentioned before.

There has also been a lack of incentives for the employees to work harder for the company. This has lead to a number of employees leaving the company. There is also lack of service promotion on the part of the Malawi Railways.

4.3 FINANCIAL ANALYSIS.

The overall financial performance of the Lake Service has not been satisfactory for a number of years. (see table 13). However, if the figures are split into cargo and passenger financial statistics, it is observed that passenger performance has been worse than the cargo performance.

For example, referring to table 13 in 1990/91 the deficit increased from K0.3 million in 1989/90 to K1.6 million in 1990/91. Although there was such a deficit, freight operations managed to come up with profits of about K0.12 million although this was 65 percent lower than the previous year. The deficit from passenger service rose by 105 percent from K0.75 million in 1989/90 to K1.54 million in 1990/91. Miscellaneous and administration operations, yielded a net loss of K0.15 million in 1990/91 compared to the previous year.

Operating at deficit which could sometimes go up to 105 per cent is not a favourable condition for survival of the lake passenger services. Therefore, to ensure the existence of the service, there is cross-subsidisation system. In this case, some of the revenues from cargo freight are used to cover the expenses incurred in passenger transportation. This is disregarding whether carried on cargo ship or together with passengers on passenger vessels. (It should be made clear here that ships such as Mtendere, Ilala and Chauncy Maples are passenger ships but they also have some sections where cargo could be taken. However there are other vessels which are specifically for cargo. Those do not take any passenger). The low revenue in passenger ships might be due to the low fares. The fares are too low to recover the operating costs. (see table 12 on revenues per passenger-kilometer).

TABLE 13

LAKE TRANSPORT SYSTEM
ANNUAL OPERATING COSTS AND REVENUES

IN K 1000

PERIOD	FREIGHT OPERATIONS			PASSENGER OPERATIONS			MISCELLANEOUS: ADMINS ETC			TOTAL SYSTEM		
	ANNUAL :OPERATING :COSTS *	ANNUAL :REVENUE	NET :REVENUE	ANNUAL :OPERATING :COSTS *	ANNUAL :REVENUE	NET :REVENUE	ANNUAL :OPERATING :COSTS *	ANNUAL :REVENUE	NET :REVENUE	ANNUAL :OPERATING :COSTS *	ANNUAL :REVENUE	NET :REVENUE
1978	665	965	300	445	205	1240	205	180	1251	1,315	1,350	35
1979	652	1,216	564	462	231	1231	177	170	71	1,291	1,617	326
1980	698	1,351	653	669	221	1448	184	187	3	1,551	1,759	208
1981	683	1,159	476	889	312	1577	185	92	1931	1,757	1,563	194
1982	903	1,479	576	1,007	361	1668	232	203	129	2,142	2,043	99
1983	1,066	1,613	547	1,141	393	1748	252	452	200	2,459	2,458	1
1983/84	1,159	1,257	98	1,350	456	1904	300	801	501	2,819	2,514	305
1984/85	1,301	1,482	191	1,485	456	1,029	231	871	640	3,017	2,809	208
1985/86	1,744	1,517	1227	1,525	584	1941	313	1,160	847	3,582	3,261	321
1986/87	1,508	1,966	458	1,766	686	1,080	381	609	228	3,655	3,261	394
1987/88	1,564	1,301	1253	2,038	820	1,218	441	1,076	635	4,043	3,197	846
1988/89	1762	1855	93	1898	857	1,041	484	1260	776	4,144	3,972	172
1989/90	1533	1848	315	1905	1159	1746	697	784	87	4,135	3,791	344
1990/91	1614	1722	108	2545	1010	1,535	622	477	1145	4,781	3,209	1,572

* Includes Ports Expenses as well

SOURCE: MALAY RAILWAYS: LIMBS

The existence of the passenger operations also depends upon the cross subsidization between the cargo vessels and the passenger vessels. This type of system is not only found in Malawi. This is also found in some other companies and governments operating passenger vessels such as Sweden, Finland and Germany. For example, referring to a field trip we had between Trelleborg and Sassintz (1992). It was noted that T-S Line which operates passenger ferries between Sweden and Germany had the same type of system.

In their operations, the fares are also too low to recover the operating costs. According to an interview, with one of the top officials on this trip, it was said that apart from carrying the passengers, the vessels are designed to carry rail trains, cars and trucks on either side of the trip. Apart from that, there are a lot of duty free sales taking place in the vessels. It was also noted that the duty free sales revenue is by far much higher than the revenues from the passenger fares. All the revenues contribute to the running cost of the ferries disregarding the source.

4.3.1 Relationship Between Costs and Revenues

In analysing the financial status of Lake Service, it is important to find out the relationship between the total operating costs and the total revenues generated during the period 1978 to 1991. This shall be done using the Correlation Theory.

Using the formula below:

$$\text{Correlation coefficient } r = \frac{\sum x_i y_i}{\sqrt{\sum x_i^2} \sqrt{\sum y_i^2}} \quad (2)$$

Let X be the observed value of cost incurred in transported.

" Y " " " revenue generated
 " x_i " deviation from the mean \bar{X}
 " y_i " " " \bar{Y}

Let n be the number of years involved

$$x_i = (X - \bar{X})$$

$$y_i = (Y - \bar{Y})$$

n	Y	X	y_i	x_i	y_i^2	x_i^2	$x_i * y_i$
1978	1350	1315	-1104	-1398	1217933	1953658	1542538
1979	1617	1291	-837	-1422	699900	2021326	1189422
1980	1759	1551	-695	-1162	482469	1349624	806940
1981	1563	1757	-891	-956	793168	913426	851176
1982	2043	2142	-411	-571	168592	325737	234343
1983	2458	2459	4	-254	19	64381	-1116
1984	2514	2819	60	106	3648	11293	6419
1985	2809	3017	355	304	126309	92578	108136
1986	3261	3582	807	869	651895	755625	701846
1987	3261	3655	807	942	651895	887866	760786
1988	3197	4043	743	1330	552644	1769609	988920
1989	3972	4144	1518	1431	2305539	2048524	2173235
1990	3791	4135	1337	1422	1788639	2022842	1902139
1991	3209	4781	755	2068	570629	4277727	1562368

$$15 \text{ years} \quad \sum Y = 36804 \quad \bar{Y} = 36804/15 = 2453.6$$

$$\sum X = 40691 \quad \bar{X} = 40691/15 = 2712.7$$

$$\sum y_i^2 = 10013278$$

$$\sum x_i^2 = 18494216$$

$$\sum x_i * y_i = 12827153$$

$$\begin{aligned} \text{Correlation coefficient } r &= \frac{12827153}{\sqrt{10013278} \sqrt{18494216}} \\ &= 0.94 \end{aligned}$$

The correlation coefficient of 0.94 indicates that there has been a close positive relationship between the cost incurred and the revenues generated. The costs have been increasing at almost the same pace as the revenues. This explains why the company has not been able to recover its expenses.

Similarly, regression analysis on the passenger costs and revenues shows a correlation coefficient of 0.92 while in cargo transportation where profits were made, it shows a correlation coefficient of 0.64. Therefore in this case, if profits are to be made the relationship between the costs and the revenues should not be very high.

4.3.2 Graphical Illustration.

Fig. 3 shows the graph of costs and revenues over the period 1978 to 1991. Using this graph to analyse the relationship between the Lake Service operating costs and revenues, it is easy to see that there has been a close relationship except towards the end of 1980 when the gap between the two started to widen by a huge margin. It is also true to say that for over 75 percent of the period covered, costs curve has been above the revenue curve indicating the losses made during that period.

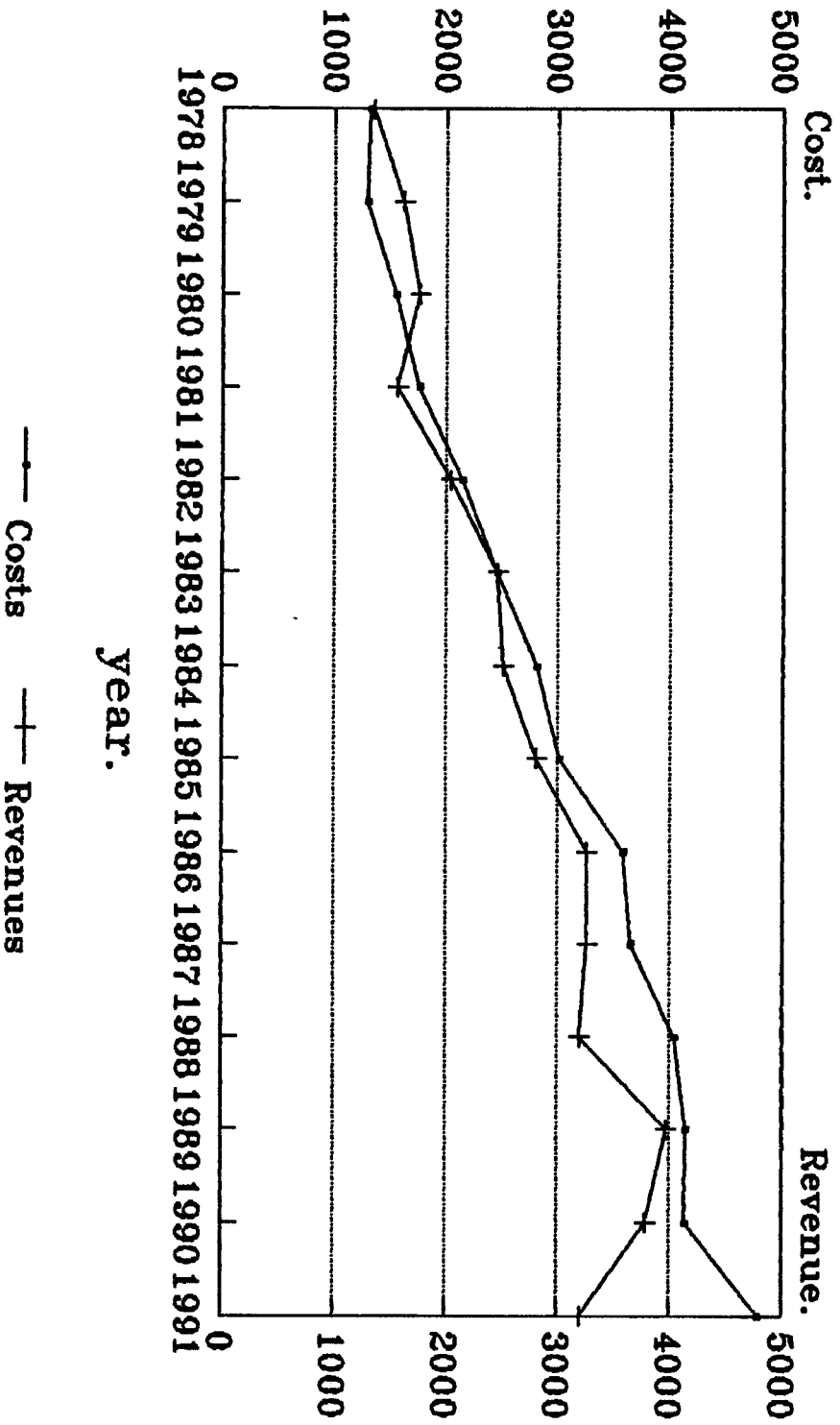
Therefore, it is important to say that if this situation is to be reversed, then there is need for more aggressive action in terms of marketing the service, operations and revision of government policies.

4.3.3 Competition and Pricing systems:

In a competitive economy, fares and freight rates are determined by the market forces. Some economists like Prof. Goss (University of Wales) have argued that shipping service should be exposed to competition because the service and pricing could be improved. However, in most developing countries, this has been a failure. The shipping companies always appeal to the government for protection and help. In Malawi although, the fares and freight rates are controlled by the government, they are also very low because of existing competition.

FIG 3

LAKE TRANSPORT COSTS. (in K'000).



Source: Malawi Railways.

The Lake Service cannot charge the same or above what the road transporters are charging otherwise it would lose a lot of customers. The freight rates are approved by the government after a proposal from Malawi Railways. In approving this, the government takes into account the financial capability of the local inhabitants with respect to the new rates as well as the survival of the service.

The Lake Service freight rates are calculated in different ways. In some cases they are charged per unit weight especially if the commodity is very heavy, ie. steel and per unit measurement if the commodity is light ie planks, revenue - based if the product is of high value, ie. computers and videos. In some cases, the rates are calculated based on the cost per ton-kilometer. The commodities are also divided into categories according to Malawi Railways Tariff Book No. 6.

Malawi Railways officials, argues that regulation of the freight rates and fares has been partly the cause of unsatisfactory performance of the lake service. Some of the their reasons are given below:-

- (i) The freight rates and fares approved by the government are usually lower than the proposed rates.
- (ii) Generally, when Lake Service applies for new rates, the approved rates are usually too low to recover the operating expenses especially passenger fares.
- (iii) It takes a long time before the rates and fares are approved such that by the time the new rates are implemented, some social-economic factors (inflation

rates, demand for the service, etc) which were taken into account in determining the rates might have changed. This may result in the new rates not performing as expected.

On the other hand, the government regulates the fares and freight rates for different reasons. Basically, it regulates price setting in order to protect the general public using the lake transport service from monopolistic behaviour of the transporters. It should be noted that approximately, more than 75 percent of the rural inhabitants have very low income compared to those working in towns and cities. However, the government also takes into account the survival of the service as already mentioned earlier. One economist said that it should also be realised that "a wholly free market in transport could be brutal. Government has responsibility not only to balance benefits to individuals against costs to the community, but also to maximise the benefits which the transport system as a whole can provide." [3]

It should be pointed out that the lake service is the only public transporter on the lake. At present if the passenger rates are deregulated, passenger operations would collapse. This is because the number of passengers would drop drastically. Only the few people living on islands (Likoma, Chizumulu) and other areas where roads transport is not accessible would continue to rely upon the ships. For those people staying in those inaccessible areas, there is a possibility to develop monopolistic conditions. This could lead to exploitation of the shippers and passengers who do not have alternative means of transportation. This is could not be accepted by the government.

It is also necessary to take note that "most transport economists agree that the price of water transportation is not the sole factor which determines the volume for shipping service, as the price elasticity of demand in water transport is relatively low" [4]. Therefore, change in freight rates of lake transport does not necessarily entail an increase or decrease of demand for shipping service. Its level may as well depend on changes of demand for the goods themselves.

4.3.4 Unpredictable Climatic Condition.

As explained earlier in chapter 3, this could be a direct as well as indirect problem. This is because, it could directly affect the operations as the drought caused a drop in water level. For example, in 1991, it meant that some ships could not berth at certain ports. In this way the operations were disrupted. This affected the revenues to some extent. In this case there was very little the Lake Service Division could have done to avert the problem.

The drought also affected the services indirectly in that the drought affected the agricultural produce much of which were transported on the lake. The cargo volumes went down. The writer feels that Malawi Railways need to improve its competence in marketing strategies in order to capture a bigger amount of manufactured goods so that even if there is drought, the volumes transported on the lake should not be affected very much.

Footnotes.

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CHAPTER 5.

STRATEGIES TO ACHIEVE COST-EFFECTIVE LAKE TRANSPORTATION.

There are various strategies which could be carried out to achieve a cost effective lake transportation in Malawi. However, what matters most is the availability of necessary resources such as human and financial resources required to achieve a specific goal. It is important to analyse the feasibility of a particular strategy before its implementation. This chapter highlights some of the strategies Lake Service could adopt to achieve cost effective transportation. These includes operational strategy, marketing strategy and government policy measures in lake transportation. The feasibility of these strategies may also depend on social and economic market forces prevailing in the country. These factors could involve cost of implementation; economic as well as social costs, effectiveness of the strategy, duration taken to yield the benefits and many more.

5.1 OPERATION STRATEGY.

(i) **Multi-Modal Service:-** The United Nations Convention on International Multimodal Transport of goods (to which Malawi is a party) defines multimodal as "... the carriage of goods by at least two different modes of transport

on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the Multimodal Transport Operator to a place designated for delivery in a different country" (1). According to the definition in Multimodal Transport Convention, "a Multimodal Transport Operator (MTO) is any person who on his own behalf or through another person acting on his behalf concludes a multimodal transport contract and who acts as a principal, not as an agent, or on behalf of the consignor or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract" (2).

In order to satisfy the needs of its customers and gain their confidence, Lake service should not be satisfied with carrying of cargo from port to port and limit its responsibility for the cargo to the time when the goods are on board the ship but even in the hinterland where the cargo originate up to where it is destined. It is not necessary that Lake Service should own its own trucks. It could arrange for these types of transport services by sub contracting with road carriers. It is also important to sub contract inland stevedoring and warehousing services. At present, Malawi Railways provides such type of services to Lake Service. The problem with it is that trains have got some limitation which trucks can overcome easily. For example, there is no rail way in the northern part of Malawi, therefore all cargo has to be transported by road. The trains also require a huge load and long distance to operate economically unlike the trucks.

If Lake Service operates as an MTO, it could benefit alot as a company and the country as a whole could also have some gains. For example, Lake Service could improve the utilisation of its vessels as more cargo would pass through

the lake. This would also lead to improvement in utilisation of port facilities. Containers would go faster through the ports thereby reducing congestion and unnecessary delays. This is also one way of reducing the existing unnecessary competition between the lake and road transport service because it could encourage complementary services between the two.

This is because the lake service is essentially an extension of either the road or rail network. For example, fertilizer originates either at Blantyre for Nkhata Bay or Chilumba via Chipoka, Chilumba for Lilongwe via Chipoka. Since one part of the trip is by road and the other by lake or rail, it is important that the whole trip should be handled by one MTO who should be responsible for all legal aspects of the trip.

Another importance of the door to door service is that it is easy to trace the source of damage to cargo and who is responsible for that. This alleviates the high cost incurred in investigation and court processes. If the cargo gets lost in the pipeline , it is easy to know where exactly it got lost. It is also easy to monitor the movement of the cargo in case of delays since there is only one source of information no matter which carrier is transporting the cargo. It is also the responsibility of the government to make businessmen (such as transporters, shipper, consignees) aware about the advantages of multi modal transport as one way of minimising costs at national level.

The country as a whole would benefit in that national products would get more accessibility and competitive on the international market. This could be due to the reduction in the transport cost incurred by exporters. Improvements in

customs procedures would lead to facilitation in trade. Exporters and importers would be able to calculate total transport costs easier than before and thereby facilitating international trade. There could also be reduction in transit times and consequently reduction in inventory costs. In this case, the government needs to improve the feeder or access road network to the main ports so that the goods could be transported from and into the hinterland easily. As already said in the introductory chapter, the vehicle ownership in Malawi is low especially in rural areas. Therefore in order to improve this situation there should also be some changes in the car importation policies. There should be revision in custom procedures.

For example, lowering of import duty, surtax, and improvements in import licences without causing too much adverse effects on the government revenue budget. There should be an encouragement in development of efficient competitive transport service by minimising restrictions and controlling tariffs wherever necessary. There should also be supportive measures for Malawian Transport Service operators such as soft loans from financial institutions and other organisations.

The government established institutions such as Development of Malawian Trader Trust (DEMATT), Small Enterprise Development of Malawi (SEDOM) and commercial Banks where potential transporters could go and borrow investment money. However, the government has an obligation to monitor the progress and standard of these institutions and make sure that they are doing the job they are intended to do without any inconvenience to the borrowers. This is because in some cases their terms of borrowing might be prohibitive to potential transporters and other businessmen. This might defeat the sole purpose they were established for.

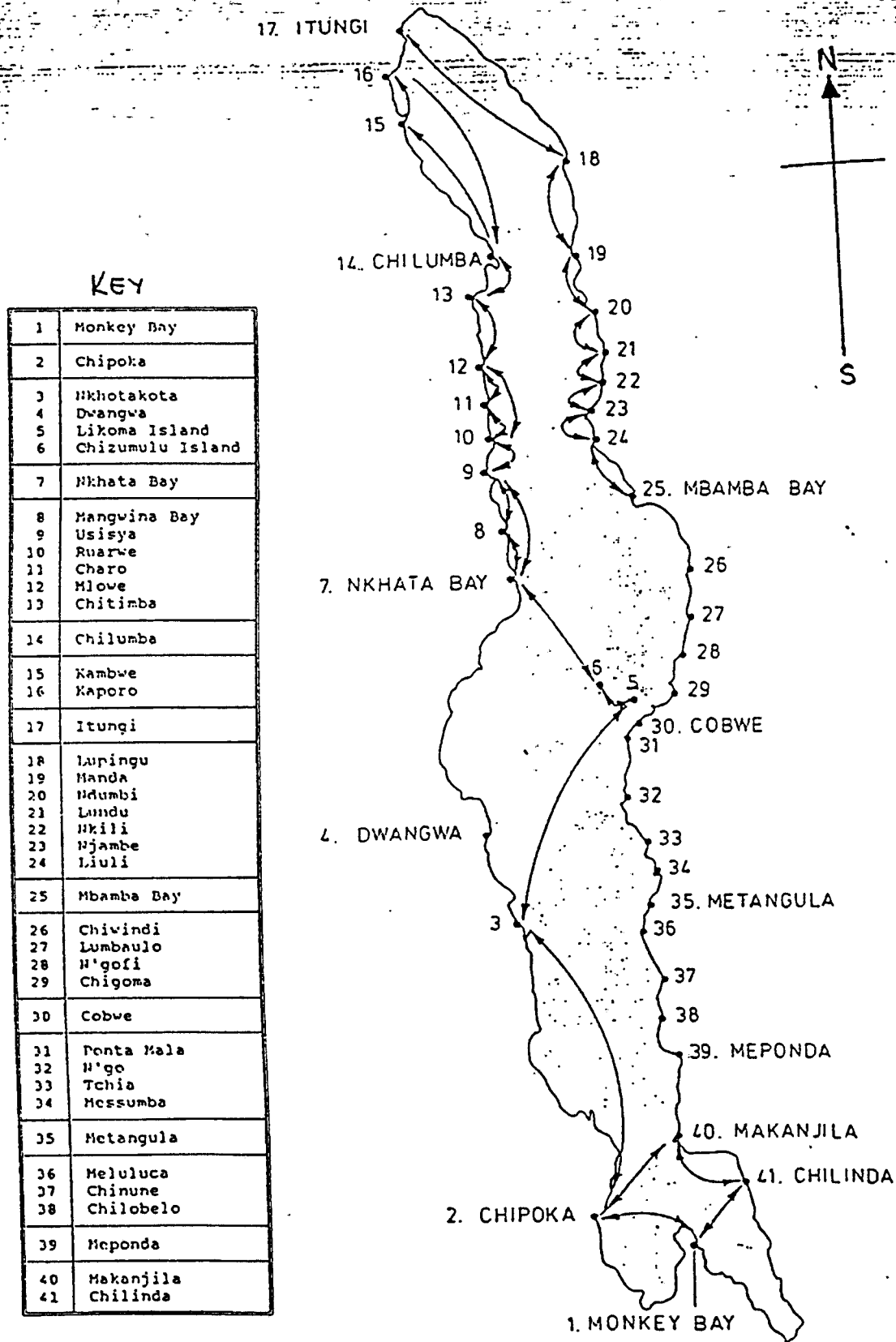
(ii) Regional Trade Development:

At present, there is very little trade taking place among the three countries sharing the lake *visa viz*; Malawi, Tanzania and Mozambique. There are no vessels from either side calling at Malawian ports or from Malawi across the border to the foreign ports. Map 3 shows the potential ports on which vessels could call at from all the sides.

The development of new strategic corridors such as Mbamba Bay-Mtwara and Metangula-Nacala could significantly improve the vessel utilisation on the lake thereby reducing the unit cost. Adam Smith argues that "trade with a neighbouring country is more advantageous than with a distant one, and a direct trade is more advantageous than a round about trade" (3) Malawi's exports to Mozambique in recent years have been mainly maize, groundnuts, and other foodstuffs. Almost all of the flows of cargo from the opposite direction have been coal from Moatize. The supply of this product has been badly disrupted by the bandits activities. This has encouraged the Malawi government to exploit her own domestic coal resources in the northern region. Here, the problem has been that the coal in Malawi is more expensive than the coal imported probably due to mining costs. This has had some negative effects on its demand.

This coal is transported by road to Blantyre and some parts of the country. Therefore, if this coal is transported by lake then it would increase the volumes of cargo transported by lake. Lake Service Division must show its existing and potential customers that it is competent enough to provide the service without major problems which could lead to destruction of their business.

FIG 4
MAP OF LAKE MALAWI SHOWING PORTS



SOURCE: SATCC/DANIDA REPORT

(iii) Acquisition of New Vessels:

The acquisition of modern passenger ferries to replace the ageing passenger ships is one of the major steps that needs to be undertaken to improve the service. The introduction of these ferries has several advantages over the present ships. Most of them are very efficient in terms of fuel consumption compared to some of the existing passenger ships (i.e Mtendere). This could help to bring down the cost of fuel which is very high according to the statistics collected. It should also be noted that passenger ferries have higher speed than the existing passenger ships.

As noted earlier in this document, passengers travel from north to south in about 3 days. One of the contributing factors could be that the ships can not move fast enough to cover the whole trip in less days as the passenger ferries could do. Therefore, bringing high speed ferries would mean moving from north to south in less time. This would encourage potential passengers who are reluctant to travel by lake because of delays. These vessels can manage to travel a lot of trips if the distance is relatively shorter. This could lead to an increase in the number of passengers transported and more revenue. It is also important to realise that, *ceteris paribus*, passengers are sensitive to delays especially when it is business oriented trips. Therefore, modern ferries can lead to improvement in demand for the lake service.

These vessels would also be able to compete for passengers against the road transport due to reliability, convenience and fare affordability. The passenger ferries are more spacious and comfortable than the existing passenger ships. Launching them on the lake would also attract more tourists.

There are historical areas along the lake. For example in Karonga there are tourist attraction sites connected to second world war, at Cape Maclear there is a historical site where the first missionaries had settled and in Nkhotakota there are historical sites connected to slave trade and many more. These modern ferries would definitely have a positive effect on the operating costs of the vessels in that maintenance and repairs costs would go down compared to the present situation.

Intensive use of tugs and barges on lake Malawi is another option which can greatly reduce the operating costs on cargo vessels compared to the use of vessels such as the newly acquired container vessel. From Alhmarks Lines which operate vessels on Lake Vernane in north Sweden and the Baltic sea, it was noted that remarkable technological progress has been made in use of the barges.

These innovations have lead to continuous improvements in speed, economy and flexibility of barge service and have resulted in growth, gains in market share and profitability. Another important aspect of these modern barges is that they are able to stand the high wave strength of the sea such as the Baltic sea. This could be one of the long term plans.

(iv) Establishment of Greater Autonomy to Lake Services:

There are a number of activities which are supposed to be controlled at Monkey Bay and yet they are done in Limbe. Unless some of these are completely transferred to Monkey Bay,

the development of lake service might be hindered. These include supplies acquisition, staff management, analitical and budgetary accounting, and data processing.

In the accountancy system, there is need for separation of freight and passenger services into cost centres with full accountability for results for each entity. Separate accounts for each voyage should be kept to monitor performance of each ship and each voyage. This information would help to monitor operations and enhance rationalisation in the deployment of the ships. At present, this is not done and it causes alot of problems in allocation of costs. The importance of separating vessel accounts is also that it would be easy to find out what has been the cause of poor performance. In order to achieve this , there is need to fully transfer the accounting department from Limbe- Blantyre to Monkey Bay. Then there is need to develop those accounting principles in line with the requirements of the division.

The passenger volumes could also improve through cross border transportation as in the case of cargo explained earlier. According to the Danida/ SATCC report 1991, there is considerable potential to expand passenger demand by introducing cross border lake service between Tanzania, Malawi and Mozambique. The most promising operations cross the lake are the following:-

Combwe-Likoma/Chizumulu
Mbamba Bay- Nkhata Bay
Metangula/Meponda-Senga Bay/Chipoka.

John L. Hazard comments that "improvements in transport facilitates the interregional exchange of persons, goods and ideas and thus contribute to economic efficiency in national development and political unity" (4). Tourism development based on the lake also provides opportunities for commercial investments on the lake transport. It is also very likely that there could be even foreign investors who would be willing to take the chance. Since shipping is a capital intensive business, the three countries can also negotiate and bring their resources together in order to meet the supply of ferries on the lake. There is need to encourage these joint adventure by private companies rather than the government. It is important that the government should be involved in creating favourable market conditions which would boost this market through realistic policies.

5.2 MARKETING STRATEGY.

Marketing involves selling the shipping services to consumers who could be shippers, consignees, forwarders or any other person who might need the service. In order to develop a better marketing strategy for cost effective transportation, it is important to carry out a specific market research and evaluation in which the size of the market and expected growth rates are estimated. The nature and size of the demand for lake transport is constantly changing as a result of many diverse factors such as the requirements of industries and local communities. There are also changes in peoples needs for travel and their preferences about how to spend their time and money. The strengths and weaknesses of the existing

service must be assessed. For example, quality of the shipping service has great impact on demand of the service. According to research which was carried out in Malawi, the following aspects of marketing should be improved in order to achieve a cost effective operations:-

- (1) Development of a market research section within the lake service. This should be able to analyse the existing information and expected data on main trade routes, cargo and cargo volumes transported, shippers, type of commodities, freight rates, market shares and costs, market trends of imports and exports. Company policies should be drawn from such intensive research and not just mere observance of the market.
- (2) There is great need for lake service marketing section to develop personal contact with its customers such as forwarders, shippers and all other players involved in the market. Close cooperation is very important in responding to customers needs especially when it comes to freight rates. This is one of the major factors which a customer requires in deciding which mode of transport to choose. Therefore, information on freight rates and time taken between main ports should be readily available as most customers do not like to wait for information.
- (3) There is also need for flexibility in the freight rates. According to the regression analysis done in the previous chapter, it is shown that costs and revenue have been rising at the same pace. This could mean that Lake Service Division is failing to control the costs. Therefore, the government should be able to accept fares and freight rates which could bring a reasonable profit margin.

At present the operations done by the passenger vessels are just social services. The services are not economical and without government assistance, the operations would cease. According to recent studies carried out by SATCC and DANIDA, even if the tariffs are increased by 50 per cent there would still be losses. see table below. The table below shows projected passenger revenue.

Table 14 Projection of Financial passenger vessel Performance.

('000 Malawi Kwacha).

	1990/1	1995/6	2000/1	2007/8
Gross revenue	1579	3289	3687	4119
Vessel Operating Costs	2423	3316	3388	3064
Share of Common Costs	663	772	805	793
Surplus/Deficit	-1507	-799	-506	262
Depreciation	256	1444	1500	1582
Income before interest	-1763	-2243	-2006	-1320

Source: SATCC/DANIDA Report, February, 1991.

According to the report by SATCC and DANIDA, February, 1991, passengers are relatively insensitive to increases in real fares (elasticity of 0.35) indicating that the financial viability of the service may be improved through a strategy of increasing tariffs. Very low passenger fares is one of the

major reasons why the passengers are insensitive to fare increases. Therefore, increase in fares to a reasonable point is very important in that the services could achieve some profit margin. It should also be noted that the lake service has a lot of projects expected to be accomplished hence it might need some profit margin for investment savings. It is not advisable that the government should bear the cost of all future projects the lake service intends to carry out.

Therefore, the government has to accept that lake service should be increasing fares accordingly. Lake service on the other hand should realise that increasing fares is not the only way to improve its revenues. Another alternative might be to increase the passengers transported per trip and holding the fares constant.

Ceteris Paribus, it is projected that if the lake services carries on necessary changes such as deployment of new vessels, rescheduling, aggressive marketing and tariff increase of about 50 per cent increase in freight tariff the following financial performance would be achieved; The table below shows projected passenger revenue.

Table 14 Projection of Financial Freight Performance.
('000 Malawi Kwacha).

	1990/1	1995/6	2000/1	2007/8
Gross revenue	2016	10404	11111	11096
Vessel Oper Costs	1503	4201	4205	4412
Share Common Costs	813	1127	1118	1084
Surp/Deficit	-300	5076	5788	5600
Deprec	1073	1479	1635	1981
Income before interest	-1373	3597	4153	3619

Source: SATCC/DANIDA Report, February, 1991.

- (4) It is also important to identify the bottlenecks of the service from the customer's point of view. Lake Service should try as much as possible to be aware of customers' problems. It should be borne in mind that the best way to promote the service is to satisfy the customers needs and to do that one needs to understand the customers position in terms of his or her problems.

5.3 GOVERNMENT ECONOMIC POLICY MEASURES.

The question about whether the government should protect or intervene in shipping service has been the focal point of many maritime discussions over the past years. In Malawi, like most developing countries, shipping is done by a statutory company. In other words, it is partly controlled by the government. The main reason is not due to fear from foreign competitors as it is in other countries. It is mainly because shipping is a capital intensive business which most private business owners can not afford to venture into. The government also controls the fares and freight rates because it has to protect the local community from monopolistic behaviours bearing in mind that most of the local inhabitants are poor and can not afford higher rates. For some residents, the ships are the only means of transport to go to the main land hence the fares and freight rates have to be affordable.

According to the Government of Malawi/UNDP report on 5th Country Programme, "it is now known that the movement of rural dwellers, who account for 90% of the population, are principally short range (under 7km) and for the satisfaction of basic needs. The only mode of transport available to the majority of rural households is walking and head loading" (5).

This includes even to those living in rural communities along the lake and this is very limiting in terms of carrying capacity, range and speed. Therefore, introduction of fast ferries would not only serve for businessmen and tourists but also the local inhabitants.

The government intervention comes in different ways. In some cases it is in form of subsidies like tax allowances, construction subsidies and credit facilities. Some economists have argued that a protected infant industry does not grow and subsidies leads to inefficiency of the shipping lines. Perhaps this could be true with our shipping service which has been in business for many years. There are no foreign vessels operating on the lake. This means there is no foreign competition and yet its efficiency is doubtful. However, it is not correct to assume that increasing tax allowance will automatically increase revenues and investment. Prof. Goss of University of Wales (Cardiff) argues that "Regression Analysis shows that for most part, there is no significant relationship between giving fiscal favours to shipping and the expansion of the fleet" (6).

The government needs to continue helping the Lake Service with target subsidies. It is difficult to foresee any reduction in lake transport subsidies, and they may very well increase as government attempts to accomplish additional social goals. These may include lower transportation costs to the low income communities, adjustment allowances to those adversely affected by abandonments of the service or new government regulations and use of lake transportation to assist economic development in impoverished areas, creation of new towns and promotion of decentralisation activities.

The subsidies should be given only where there is a clear requirement for it to meet social needs that would not otherwise have been met. This means that subsidies must be controlled and not left open ended. The government authorities must have means of securing and monitoring that the subsidies are directed to a particular target. For example, government shipping investments, should go where it brings good returns in social, economical and environmental terms. It follows that the proper formulation, appraisal and execution of government investment plans should be regarded highly in providing subsidies.

The co ordinating role of the Transport Planning Unit (TPU) in the department of Economic Planning and Development (EP&D) of the Office of President and Cabinet should be strengthened in line with the Statement of the Development Policies. There should also be improvements in system and mechanism for research, data collection and analysis leading to policy advice on issues and programmes affecting the lake service. The Transport Planning Unit in conjunction with Ministry of Trade, Ministry of Transport and Communications should carry out studies which would lead to improvement in the lake transportation.

The government policies affecting the production of goods transported on the lake and costs involved should be revised periodically to achieve good performance. The government should also look beyond the domestic market in order to assist the Lake Service. As already mentioned earlier, Lake Service has to start operating across the lake to Tanzanian and mozambique ports in order to improve the trade. This shall mean operating international services which shall require government approval. The government should be able to come up with the costs and benefits it could derive by accepting that idea and the costs to incurred.

It should be noted that there is a possibility that foreign vessels from those other countries might also start calling at the Malawian ports. This might mean introduction of foreign competition which is not there as of now. It is also important to note that during this time the government shall be required to improve further the port facilities according to international standards. There is also need for good relationship among the three countries in order to achieve mutual benefits. This shall mean that the three governments should sit down and come up with an international agreement on vessel operation on Lake Malawi. This operating procedures could as well be worked out by the respective vessel operating companies rather than at government level. This is important because they are the people who have much information interms of vessel operations. However this can only be done after the three countries have made the agreement that foreign ships can call at their ports. This also means that when the government is formulating policies concerning the lake service, it must do that in consultation with the Lake Service Division and other relevant ministries and government or private organisations.

Privatisation of the Lake Service.

The government is spending quite alot of funds to keep the lake service in operation. The passenger ships operate social services and not economic services as it is supposed to be. This could not be the case if these vessels are in the private hands. It is necessary that the government should have some plans to privatise the Lake Service in future. This would

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ease the financial constraint the government is facing. At present, there are no other private vessels carrying passengers on the lake. The government should also establish favourable conditions to attract domestic as well as foreign investors who could manage to run passenger and cargo ferries on the lake. This would improve efficiency among the operators. It would also increase competition and avoid unnecessary rising of fares and freight rates.

Although it is advisable to encourage private ferries to operate on the lake, the government would still not lose control over safety standards and other important aspects of passenger and cargo lake transportation.

Footnotes.

- (1) Hans Carl (1993) (pp 1) An Article on Multi Modal Transport Handbook, UNCTAD.
- (2) Ibid (pp 12).
- (3) Smith Adam, (1976) (pp 114) An Inquiry in the Nature and Causes of The Wealth of Nations, University of Chicago Press, United States
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CHAPTER 6

RECOMMENDATIONS and CONCLUDING REMARKS.

In conclusion the writer wishes to re-establish the fact that the economic framework of Malawi depends upon the agricultural produce which is the main source of foreign exchange earnings. The country has few industries and other natural resources which are utilised commercially at the international level. At present, most domestic cargo is transported by road rather than by any other mode of transport.

However, lake transportation is the cheapest mode of transport when compared with road, air and rail. It is for this reason that the government intends to encourage shippers to transport their cargo through the Lake Service to minimise national transport costs. This applies to domestic cargo as well as the imports and exports destined for international markets. This would reduce the total national transport cost by a significant margin. The lake Service Division under Malawi Railways has the responsibility for operating the vessels.

Apart from specialised cargo transpotation, the lake service also operate vessels which combine cargo and passengers. Lake Service plays a very important role in national development because it functions as a bridge to serve the local inhabitants living on islands as well as those from the main land by transpoting their cargo across the lake to the local markets at a low cost. In this way, it facilitate economic and social activities within the country. The Lake Service also creates employment both directly and indirectly.

Some people are directly employed within the shipping company while others are indirectly employed in activities which exist due to the operation of the vessels on the lake. This includes shopowners at the ports who sell consumables to the shipping company employees and any other business which is indirectly related to shipping. Lake Service would facilitate production of goods and services because, *ceteris paribus*, lower cost on final price brought about by lower transport cost leads to higher consumption and production. It also enhance foreign exchange savings as the increase in domestic production reduce imports and increase exports. It also plays a role in resource reallocation.

The Lake Service has been operating at a loss for over the past decade especially on passenger ships. The Lake Service's highest costs are incurred in salaries and fuel costs. These are followed by maintenance and repairs cost. The main problems facing the Lake Service Division include, the ageing fleet, which leads to high maintenance and repairing cost. There is also a problem faced in aquisition of the spareparts. This is as a result of internal procedures of the Malawi Railways. Lack of trained personnel is another problem which needs immediate attention. Other problems include unpredictable climatic changes affecting the water level and volumes of agriculture produce transported on the lake. Then lack of adequate facilities at the ports.

In order to minimise the lake transport costs, there is need for the formulation of measures which would induce cost effective transportation. The macro economic evaluation done in this document indicates that, there is a high correlation between the total costs incurred and revenue generated over the past decade. The passenger service is in a critical financial problem as compared to the cargo service where

profits were realised over the years. The passenger operating costs have been increasing at a higher rate compared to the revenues. Through a graphical illustration, it is indicated that the total costs and revenues gap is widening further. Unless appropriate measures are taken to reverse the trend, Lake Service might soon operate at a critical loss where it might not even be able to recover the capital cost.

It is recommended that in order to improve the cost effectiveness, Lake Service should be given greater autonomy so that it make its own decisions such as ordering of spare parts without consulting Malawi Railways. The training of the crew members should be seriously considered. The managers and top level staff in the administration need to be fully trained in the maritime transport field. Only the competitive staff should be employed. The existing staff should be exposed to vocational training when the time is due.

It is also recommended that vessel utilisation should be improved. This could be done by operating multi modal services; for example the introduction of international cargo and passenger services across the lake to the neighbouring countries (Tanzania and Mozambique). This would increase the load factor thereby improving the vessel utilisation for more cargo and passengers would be available.

Another recommendation is that there is need for purchasing new cargo and passenger ferries to replace the ageing fleet. This would have a positive effect on vessel utilisation and unit cost in that there could be a reduction in maintenance costs due to reduced breakdowns. The vessels would then be spending much more time steaming than lying idle waiting for repairs. The evaluation done also indicates that the vessels spend quite a lot of time in ports, a situation

which is not justified. Improvement in transit time would improve frequency assuming that the level of cargo available would go up in future, ceteris paribus. There is also the need to improve marketing strategies. The Lake Service should take a leading role in promotion of the service which is low at present. Lake Service Division need to establish a very competitive marketing section. This should be able to explore domestic as well as international market. This means that the service should also have well trained personel and adequate facilities at the ports as well as in the vessels.

It is also recommended that the government should be able to formulate and review policies which would stimulate cost effective transportation on the lake. The Transport Planning Unit (TPU) of Economic Planning and Development (EPD) has to be strengthened in terms of human and financial resources in order to improve its capabilities in data collection & analysis, monitoring of projects review of transport policies and its co ordinating role among related ministries and government departments. These include ministry of Transport, Trade, Industry and tourism, to mention a few. Since the ports are under the government, the government should acquire necessary handling facilities for those ports which do not have adequate facilities as a means of facilitating the flow of cargo and passengers. This may include building jetties and storage sheds and cranes at ports where they are not available.

The government should also build satisfactory road and rail network so that cargo to and from the lake can travel efficiently. The government should also ensure that restrictions on the import and export processes are not prohibitive because this might affect the cargo flow on the lake.

The government also needs to build up a good relationship with countries with which it is trading, especially those sharing the lake. This is very important in that, if the relationship is good, then it may be easy to carry out trade successfully.

It is also recommended that there should be joint venture investment projects among the countries using the lake. This could be done even at a bilateral level bearing in mind that shipping is a capital intensive business and developing countries have inadequate capital. With co operation, cargo and passenger ferries could be purchased easily. This could also ease problem of losing a lot of foreign exchange in purchasing them. Joint venture would also reduce the number of vessels on the lake thereby minimising unnecessary competition which would lead to critical losses.

The final recommendation is that the government should establish favourable market conditions which would encourage domestic and foreign investors to operate passenger and cargo ferries on the lake.

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